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AUTHOR Pinnell, Gay S.; And Others
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ABSTRACT

Conducted as part of the 1992 Integrated Reading Performance Record (IRPR), a study investigated the oral reading proficiency of a subgroup of students participating in the 1992 reading assessment conducted by the National Assessment of Educational Progress (NAEP). Subjects, 1,136 fourth graders, read aloud one passage and were audiotaped as they responded to a series of questions about habits and attitudes related to both instructional and recreational reading. Subjects also completed measures of fluency and comprehension. Major findings were that (1) much can be learned and documented about children's abilities by listening to them read aloud; (2) 55% of the subjects were considered to be fluent, but only 13% could be described as consistently reading with appropriate phrasing and with at least minimal expressiveness; (3) oral reading fluency demonstrated a significant relationship with reading comprehension; (4) fluent reading appeared to be related to certain literacy activities; (5) 57% of the students were at least 96% accurate in their oral reading of the passage; (6) 61% of the students read the passage at a rate of at least 100 words per minute; and (7) accuracy and rate displayed some relationship to reading fluency. (Contains 11 tables and two figures of data. Appendixes present the interview guide, and a description of the procedures and methods of the IRPR.) (RS)

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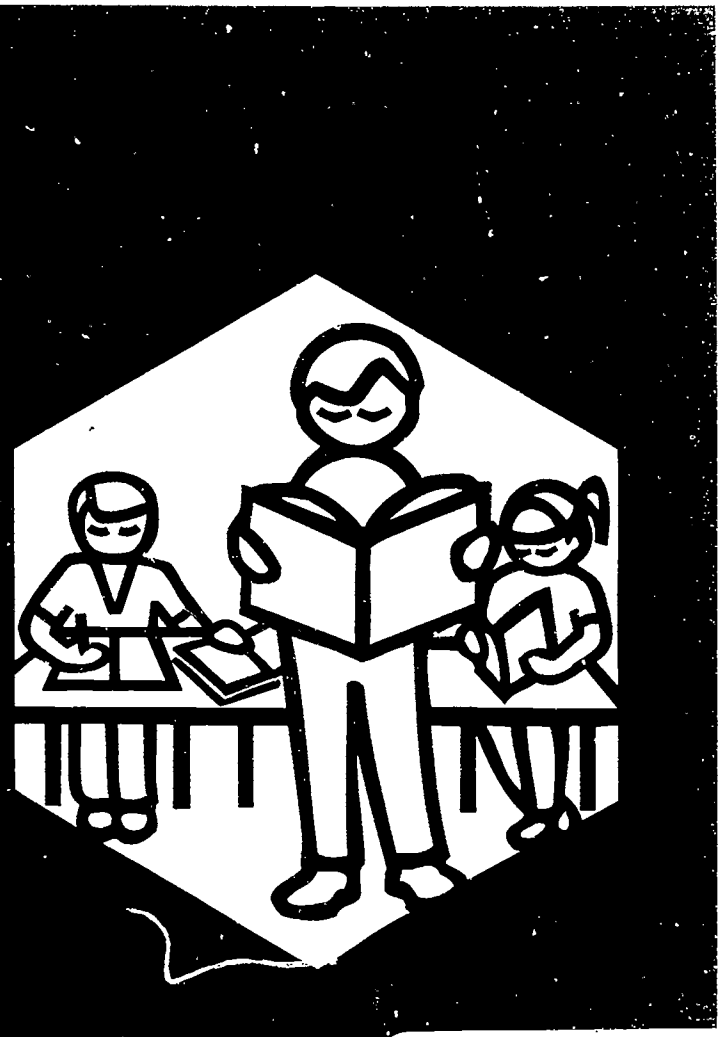

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Listening to Children Read Aloud

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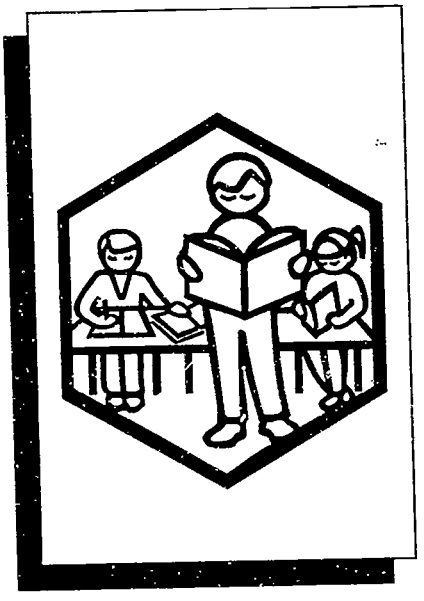

Gay S. Pinnell
John J. Pikulski
Karen K. Wixson
Jay R. Campbell
Phillip B. Gough
Alexandra S. Beatty

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Introduction

In this, its 25th year of serving as the nation's only ongoing monitor of American students' academic achievement, the National Assessment of Educational Progress (NAEP) focuses this report on a relevant, but often ignored, aspect of reading development — oral reading proficiency. In describing what students know and can do in reading, NAEP assessments regularly collect data on reading proficiency as well as contextual information regarding students instructional and background experiences.

The investigation of fourth graders' oral reading abilities was conducted as a part of the 1992 *Integrated Reading Performance Record* (IRPR), a special study involving individual interviews with a subgroup of fourth graders in the 1992 NAEP reading assessment. As a result, NAEP for the first time can describe students' oral reading fluency in light of the accuracy and rate with which they read, and their overall literacy development.

In responding to the longstanding connection between students' reading habits and proficiency, the IRPR coupled its oral fluency assessment with student interviews about the content, context, and frequency of their reading practices at home and at school. In addition, the IRPR also involved the collection of sample assignments and representative works from

students' reading classes. These results are presented in a companion report, *Interviewing Children About their Literacy Experiences.*[1]

Major Findings of the IRPR Oral Reading Study

The oral reading study conducted as a part of the IRPR represents NAEP's first, and one of the first ever, attempts to measure aspects of oral reading on a large-scale basis. For many years, oral reading assessments have been conducted informally in classrooms, where teachers depend on the information they gain from these observations to determine the status of students' reading development — and individual needs. The IRPR study of oral reading provides a national data base that can be used to inform educators, parents, and researchers about how fourth graders are developing and how their oral reading abilities relate to their overall reading achievement.

Describing Oral Reading Fluency. Perhaps the most significant finding from this study is that much can be learned about children's abilities by listening to them read aloud. The fluency scale developed for the IRPR to describe those aspects of oral reading that go beyond accuracy and rate may have wide applicability for reading educators.

Fourth Graders' Oral Reading Fluency. In reading a portion of one narrative text, 55 percent of fourth graders were considered to be fluent. However, only 13 percent could be described as consistently reading with appropriate phrasing and with at least minimal expressiveness — the highest degree of fluency rated. This was a passage they had read silently twice before. Those students who were rated as fluent in their oral reading demonstrated appropriate phrasing and adherence to the author's sentence structure. Students who were not rated as fluent read primarily in two- or one-word phrases with little or no recognition of the text's sentence structure.

Oral Reading Fluency and Reading Proficiency. Another major finding from this study was that oral reading fluency demonstrated a significant relationship with reading comprehension. Increasingly higher levels of

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[1] Campbell, J. R., Kapinus, B. A., Beatty, A. S. (1994). *Interviewing Children About Their Literacy Experiences.* National Center for Educational Statistics. Washington, DC: Government Printing Office.

fluency were associated with increasingly higher overall reading proficiency, as measured on the main NAEP reading assessment.

Oral Reading Fluency and Literacy Experiences. Fluent reading also appeared to be related to certain literacy activities. For example, having read at least one book outside of school in the previous month was associated with higher oral reading fluency. Making use of the library to find recreational reading materials was also related to reading fluently. In addition, the fluent readers were more likely to say they had daily opportunities in class to read books they had chosen. Interestingly, reading aloud in class as a part of instruction demonstrated little connection to oral reading fluency. This may be due to the wide variety of oral reading activities that teachers may use and the likelihood that some are more effective than others with individual students.

Oral Reading Accuracy. Two other aspects of oral reading — accuracy and rate — were measured in the IRPR oral reading study. The majority of students (57 percent) were at least 96 percent accurate in their oral reading of the passage presented to them. The relationship between reading accuracy and reading comprehension appeared to be dependent on the nature of students' deviations from the text. That is, the number of deviations students made in their oral reading that resulted in a meaning change was more directly related to their overall proficiency than simply the total number of deviations they made. There was also some indication that students made fewer self-corrections of their deviations from text when no meaning change occurred.

Oral Reading Rate. Sixty-one percent of fourth graders read the IRPR passage at a rate of at least 100 words per minute. A consistent pattern was apparent in the relationship between proficiency and rate — on average slower readers demonstrated lower reading proficiency.

Accuracy, Rate, and Fluency. Both accuracy and rate displayed some relationship to reading fluency. While not all fluent readers were among the most accurate or the fastest of their peers, those readers who read fluently were, on average, at least 96 percent accurate and read the passage at an average rate of at least 126 words per minute.

Background on the Integrated Reading Performance Record

As a special study, the IRPR was based on the same theoretical approach to reading as the main NAEP reading assessment. The NAEP assessment framework, developed through a national consensus process, embraced a view of reading that acknowledges the importance of contexts and purposes as readers construct meaning from the text.[2] Furthermore, this framework views reading as a dynamic, complex interaction among the reader, the text, and the context or situation. With this perspective, NAEP's 1992 reading assessment reflected current understandings about how reading abilities develop — through an integration of multiple cognitive, affective, and social process.[3]

Educators generally agree that literacy learning takes place through a broad range of oral and written language activities that include personally relevant experiences such as responding to reading, reflecting on reading activities, communicating with others about reading, and choosing to reading independently.[4] Many of these new understandings about reading development have led to a rethinking of traditional methods of assessing reading comprehension. For example, the 1992 NAEP reading assessment involved students in constructing, extending, and examining meaning while reading texts for different purposes. Also, students were required to spend the majority of their testing time providing constructed responses to demonstrate their understanding of longer, intact texts from a variety of sources. Many state assessment programs have also implemented innovative measures of reading and literacy that are intended to reflect quality instruction and to capture a broader view of students' behaviors and abilities with regard to literacy.[5]

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[2] National Assessment Governing Board. *Reading Framework for the 1992 and 1994 National Assessment of Educational Progress*. Washington, DC: Government Printing Office.

[3] Langer, J. A., Duffy, G. G., Roehler, L. R., & Pearson, P. D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research*, 61(2), 239-264

Tierney, R. J., (1990). Redefining reading comprehension. *Educational Leadership*, 37-42.

[4] Ruddell, R. B., & Ruddell, M. r. (1994). Language acquisition and literacy processes. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical Models and Processes of Reading*. Newark, DE: International Reading Association.

[5] O'Neil, J. (1992, May). Putting performance assessment to the test. *Educational Leadership*. 14-19.

Buechler, M. (1992). *Performance Assessment*. (Policy Bulletin, No. PB-813), Indiana Education Policy Center: Bloomington, IN.

Moody, D. (1991). *Strategies for Statewide Student Assessment* (Policy Brief, Number 17), Washington, DC: Office of Educational Research and Improvement.

Beyond these large-scale efforts to make assessment more instructionally relevant, individual classrooms across the country have shown themselves to be fertile ground for cultivating a new generation of assessment techniques. Born out of the need to supply teachers, parents, and students with complete information about literacy development, and nurtured by a realization that traditional, multiple-choice tests provide limited information about students' abilities, these new approaches to reading assessment have attempted to transform classroom testing into a meaningful and integral part of instruction. With many of these assessment initiatives, the student is involved in and informed by the process as it unfolds, instead of waiting until the end to receive a single grade that is meant to describe an entire body of work.[6]

By drawing on the latest and best classroom-based assessment techniques, the IRPR was developed to open a larger window on the literacy development of American fourth-grade students within the constraints of a large-scale assessment. As an *integrated* measure, the IRPR was designed to combine and examine several important aspects of literacy development — reading habits, reading attitudes, literacy-supportive environments, reading fluency, reading responses, independent reading experiences, and instructional reading activities. As a *performance record*, the IRPR involved students in talking about their reading activities, demonstrating their oral reading fluency, and portraying their understanding through different modes of responding.

The IRPR clearly fits in with several goals for assessment recently identified in the reading community. One of these goals, to make assessment mirror real-life experiences, grows out of an understanding that "authentic challenges . . . are inherently ambiguous and open-ended."[7] The major limitation of many tests is that they presuppose a "right" answer and often, unnaturally constrain students' options for responding. Reading educators have long recognized that all readers bring unique background experiences

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[6] Valencia, S. W., Hiebert, E. H., & Afflerbach, P. P. (Eds.). (1994) *Authentic Reading Assessment Practices and Possibilities*. Newark, DE: International Reading Association.

[7] Wiggins, G. (1989, May). A true test: Toward more authentic and equitable assessment. *Phi Delta Kappan*, (p. 706).

and knowledge to their reading interpretations, and thus construct meanings from text that may differ from those understood by other readers.[8] While the format of the main portion of the 1992 NAEP reading assessment addressed this issue by providing considerable scope for students to construct written responses to reading tasks, the IRPR takes the goal a step further. Students were asked to respond orally to some of the same questions they were asked to write about in the main assessment, a task that replicates the way in which many readers typically respond to reading — by talking about it with someone else. Through reading-related conversations and performances such as in the IRPR, not only can in-depth information be collected, but students also can receive support for pursuing literacy-related activities and experience success with different modes of communication.

Developing the Integrated Reading Performance Record

NAEP convened a committee of prominent reading researchers and educators with extensive and diverse backgrounds in the areas of reading fluency, reading assessment, and literacy development to oversee the development, administration, and reporting of the IRPR (see Appendix B). Its goal was to design an assessment tool that would emulate current understandings about effective classroom assessment and provide a method for collecting important information about the state of literacy among America's fourth-grade students. In addition, because this was the first large-scale attempt to study oral reading fluency, the committee drew on the extant research to develop the most appropriate oral reading analysis procedures for an assessment of this scale.

Initial planning for the project began in early 1990 and culminated with a field test of the IRPR in 1991. Results of this field test along with first-hand observations and feedback from IRPR administrators were used to refine the instrument. Once again, this process was overseen by the development committee. The IRPR interviews of fourth graders were conducted in 1992

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[8] Smith, M. W. (1991). Constructing meaning from text: An analysis of ninth-grade reader responses. *Journal of Educational Research, 84*, 263-271.

Spiro, R. J. (1980). Constructive processes in prose recall, In R. J. Spiro, B. C. Bruce, & W. F. Brewer (Eds.), *Theoretical Issues in Reading Comprehension*. Hillsdale, NJ: Erlbaum.

Rosenblatt, L. (1978). *The reader, the text, and the poem*. Cambridge, MA: Harvard.

and the findings presented in this report were the result of that data collection effort.

The IRPR interviews were conducted with a subsample of the fourth graders who took the main assessment. A total of 1,136 fourth graders who were interviewed provided responses that could be coded and scored. This sample represented 68 percent of all students who had been identified to participate in the IRPR. Clearly, this lower-than-expected participation rate was of some concern in reporting the results of this study. However, it was determined that students who participated were not substantially different on any of the demographic characteristics from the total population of fourth-grade students in the nation; thus, the IRPR sample was considered to be nationally representative of fourth graders. (Information regarding the participation rate and important demographic characteristics of students who were sampled is contained in Appendix B.) The relatively high nonparticipation rate was attributed to several factors, the most important of which appears to have been the practical difficulties of handling and shipping the array of materials (i.e., folders with work samples, audio tapes, interview guides) from across the country to a central location. This may be an example of the logistical problems inherent in conducting large-scale, performance-based studies like this one.

Each student participated in an individual, one-on-one assessment session with a trained administrator. The sessions consisted of a series of questions about habits and attitudes related to both instructional and recreational reading, as well as measures of fluency and comprehension. These sessions were taped and transcribed later for evaluation. As a result, minimal note-taking was required on the part of the administrator, allowing for a more natural, relaxed environment in which to conduct the assessments. Each individual session consisted of an introduction by the administrator and three major sections. (The IRPR Administrator's guide is presented in Appendix A.)

Introduction. During the introduction, students were welcomed and made familiar with how the session would be conducted. They were then asked

to read aloud a brief passage from a *Highlights* magazine that had been determined to be relatively easy for typical fourth graders. This served both to familiarize them with the tape recording process and to enable the interviewer to determine whether the student should be asked to read aloud from the more difficult assessment passage later in the interview. If the student seemed to have considerable trouble reading aloud from the less difficult initial passage, he or she was not asked to read the more difficult passage because the experience might be frustrating and unpleasant.

Reading Habits and Practices Interview. After the introduction the student was asked about his or her habits and attitudes related to both recreational and instructional reading. The student was shown pictures of various types of reading materials (storybooks, magazines, information books) and asked about his or her experiences with those types of materials. Students were asked to bring to the session a book they were currently reading or had recently finished. During the session, they were engaged in a conversation about these reading materials. Questions focused on how much the students enjoyed these books and how well they understood them. The students were also instructed to bring the books they were currently using during reading instruction in the classroom. They were asked about reading class activities and their reactions. Results from this portion of the study are presented in the companion report, *Interviewing Children About Their Literacy Experiences.*

Fluency and Comprehension Assessments. The next section of the interview was the fluency and comprehension study; students read a passage from the main assessment silently, answered questions about it orally, and then read the passage aloud. The oral reading was later analyzed for accuracy, reading rate, and overall fluency. The findings from the oral reading portion of the IRPR are presented in this report. The results of comparing students' verbal responses in the IRPR and their written responses in the main NAEP assessment appear in another NAEP publication, *Reading Assessment Redesigned: Authentic Texts and Innovative Instruments in NAEP's 1992 Survey* (in press).

Classroom Work Samples Interview. The final section of the IRPR was a discussion with students about examples of the classroom work they

brought to the interview. Students were asked about the purpose of the activities, what had been learned from the activities, how frequently they did such work, and how they knew they had done a good job. The examples of classroom work were collected and analyzed later. Information about students' classroom work samples is presented in the companion report, *Interviewing Children About Their Literacy Experiences.*

The information obtained from these interviews was linked to data from the main assessment, including the overall reading proficiency of students participating in the IRPR study, their background information, and the responses of their teachers and school administrators to questionnaires. A summary of these findings is presented within this document and in an additional, IRPR report. Given the broad scope of information gathered, two reports have been written to focus on the two major areas of interest within the IRPR — interview results about reading habits and instruction, and oral reading results. This report, *Listening to Children Read Aloud*, focuses specifically on the oral reading portion of the IRPR. It provides a thorough discussion of the rationale for assessing students' oral reading abilities, the procedures used in conducting the oral reading assessment, and the results of the study.

A separate report, *Interviewing Children About Their Literacy Experiences*, provides results of the conversations conducted with fourth graders in the IRPR study about their reading habits and practices, and their classroom activities related to reading. It also describes how these literacy experiences related to students' overall reading proficiency as determined by their performance in the main portion of the 1992 reading assessment. Taken together, the two 1992 IRPR reports provide a rich source of information about how our fourth-grade students are developing as readers and literate citizens.

Outline of This Report. The IRPR oral reading study represents a first attempt to conduct an oral reading analysis on a large-scale basis. As such, it provides important data for educators and researchers about fourth-graders' oral reading proficiency and how that relates to their overall reading

abilities and experiences. Oral reading has received increased attention during the past few years as an important element in students' literacy development.[9] Researchers have come to recognize the roles of fluency, accuracy, and reading rate in relation to reading comprehension.[10] The results of this special study may contribute significant understanding and refined methodology to the growing body of research in this area.

Chapter One of this report describes the construct of fluency as it is used in current research and how it was defined for the purpose of the IRPR oral reading study. A literature review describes the educational and research context in which the study was conducted. Chapter Two details the results of analyzing students' oral reading with the use of a holistic fluency scale. Students' fluency ratings are examined in relationship to proficiency and literacy experiences, as well. Chapter Three focuses on two major aspects of oral reading — accuracy and rate. Their relationship with proficiency and fluency is also explored. In addition, this chapter examines deviations from text that change meaning and patterns of self-correction in students' oral reading. Finally, Chapter Four provides a synthesis and discussion of the implications of the oral reading study.

It is worth noting that only national results are presented in this report instead of the traditional subgroup data that appear in other NAEP publications. Because of the innovative nature of key aspects of this study, like the IRPR Fluency Scale, the question of differences between subgroups of fourth graders was less important than simply exploring what could be learned by examining reading development in this way. Essentially, the overriding focus in the oral reading study portion of the IRPR was not to observe differences between groups, but to examine the relationships between oral reading abilities and overall reading proficiency.

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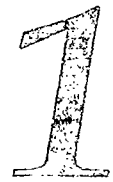
[9] Ruetzel, D. R., Hollingsworth, P. M., & J. L. Eldredge. (1994). Oral reading instruction: The impact on student reading development. *Reading Research Quarterly, 29*, 41-62.

S. A. Beach. (1993). Oral reading instruction: Retiring the bird in the round. *Reading Psychology: An International Quarterly, 14*, 333-338.

[10] Stayter, F. Z., & Allington, R. L. (1991). Fluency and the understanding of texts, *Theory Into Practice. 30*, 143-148.



Reading Fluently

Many recent reports, including the *NAEP 1992 Reading Report Card*, clearly document the fact that significant numbers of students in the United States have substantial difficulty comprehending materials that they read.[11] The prevailing view of reading is that it is a dynamic, constructive process requiring the reader to build meaning from text by combining information from the passage with information that the reader brings to the reading situation. One explanation for difficulty in comprehending texts is that readers may bring limited background information to the particular reading

[11] Mullis, I. V. S , Campbell, J. R., & Farstrup, A. E., (1993), *NAEP 1992 Reading Report Card for the Nation and the States*. National Center for Education Statistics. Washington, DC: Government Printing Office.

Mullis, I. V. S., Dossey, J. A., Campbell, J. R., Gentile, C. A., O'Sullivan, C., & Latham, A. S. (1994). *NAEP 1992 Trends in Academic Progress*. National Center for Education Statistics. Washington, DC: Government Printing Office.

task. They may be unfamiliar with the topic of the material, have little experience with the particular genre of the passage, or have insufficient language resources on which to draw in reading the text fluently.

Another possible source of reading comprehension problems is the inability of some readers to access ideas in the text because of limited word recognition or inefficient reading processes. The extent to which words are recognized and understood by readers may vary depending upon the context within which the words appear. An unfamiliar word may be understood if the context of the passage provides adequate cues. Further complicating the process of word recognition is the multiple meanings assigned to many words. Readers may be familiar with one or more connotations, but may stumble when the same word appears in a context that does not fit with their limited knowledge of the word's multiple meanings.

Whatever may cause the misreading of words, proficient readers tend to maintain their overall comprehension by drawing on their evolving understanding of the passage as well as their familiarity with text structures and language patterns.[12] Competent readers are focused on the meaning of the text; their goal is to acquire a certain level of understanding. For these readers, periodic deviations from the text may not be disruptive to the meaning-making process. Rather, they may signal a reader's attempt to make sense and, in turn, may actually facilitate comprehension. Skilled readers can compensate for unexpected textual encounters by substituting words that make sense, or fit grammatically into the sentence; by skipping words that could be viewed as contributing little to the meaning; or by inserting their own words if language structures in the text vary from what they anticipated. In doing so, readers are drawing on their knowledge of language as well as their general life experiences in the pursuit of the ultimate goal in reading — gaining meaning.[13]

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[12] Clay, M. M. (1985). *The Early Detection of Reading Difficulties* (3rd ed.). Portsmouth, NH: Heinemann.

[13] Goodman, K. S. (1994). Reading, writing, and written texts: A transactional sociopsycholinguistic view. In R. B. Ruddell, M. R. Ruddell, & H. Singer, (Eds.), *Theoretical models and processes of reading* 1093-1130. Newark, DE: International Reading Association

Describing Oral Reading Fluency

One method for observing the underlying processes that take place as readers make sense of the text is to listen as they read aloud. Oral reading fluency has gained new attention in recent years as an important element in students' overall reading abilities. Teachers have long known that oral reading fluency was among the many abilities exhibited by good readers. Proficient readers not only recognize and read words quickly, but also tend to read with a sense of ease and fluidity that highlights and reflects their understanding of the text's meaning.[14] Many researchers have suggested that oral reading fluency may be directly related to the quality of students' reading comprehension.[15]

Despite renewed interest in oral reading fluency and its association with reading development, there is no widely accepted definition of reading fluency.[16] In some cases, it has been defined simply as the ability to recognize words rapidly and accurately. With such definitions, fluency is associated with a level of "automaticity" in word recognition that allows readers to move beyond preoccupation with decoding and turn more of their attention to comprehending the text and enjoying the reading experience.[17] Other fluency definitions stress the expressiveness of students' oral reading and readers' use of appropriate phrasing. With these approaches to fluency, the readers' oral production of the text is seen as

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[14] Zutell, J., & Rasinski, T. V. (1991). Training teachers to attend to their students' oral reading fluency. *Theory Into Practice, 30,* 211-217.

[15] Reutzel, D. R., Hollingstorth, P. M., & Eldredge, J. L. (1994). Oral reading instruction: The impact on student reading development. *Reading Research Quarterly, 29,* 41-59.

Wilkinson, I., Wardrop, J. L., & Anderson, R. C. (1988). Silent reading reconsidered: Reinterpreting reading instruction and its effects. *American Educational Research Journal, 25,* 127-144.

Stallings, J. (1980). Allocated academic learning time revisited, or beyond time on task. *Educational Researcher, 9,* 11-16.

[16] For an extensive discussion of oral reading fluency and current research on the topic see Zuttell, J., & Rasinski, R. (Eds.). (1991). Fluency in oral reading [Special issue]. *Theory Into Practice, 30.*

[17] Samuels, S. J. (1994). Toward a theory of automatic information processing in reading, revisited. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical Models and Processes of Reading.* Newark, DE: International Reading Association.

Stanovich, K. (1991). Word recognition: Changing perspectives. In R. Barr, M. L. Kamil, P. Mosenthal, & P. D. Pearson (Eds.), *Handbook of Reading Research,* Vol. 2, 418-452. New York: Longman.

closely associated with their thinking about and understanding of the passage. In fact, some researchers have suggested that becoming a fluent reader has more to do with focusing on meaning construction than it has to do with attending to the words on a page.[18]

Despite the variations in definition, most of the research into oral reading proficiency has centered around the ease, rapidity, and accuracy of the performance. While rate and accuracy of oral reading are relatively straightforward characteristics to observe and measure, what has been termed the "ease," "smoothness," and "effortlessness" with which children read has proven more difficult to describe in concrete terms. However, it is this aspect of oral reading that may, in fact, be the attribute most related to how well students understand what they are reading.[19]

As readers attempt to construct meaning from text, they draw on their prior experiences with text structure and language patterns. They need to recognize individual words and their meanings, as well as the structure and usage of language in the text. Larger idea units or phrases embody meaning that goes beyond the meanings of individual words. Readers who can understand the meaning of phrases are beginning to build a deeper understanding of the text and can devote more attention to reflecting upon and interpreting what they read.[20]

If readers have an adequate understanding of what they are reading they will most likely recognize the sentence and phrasal structure intended by the author and will replicate that to some degree in their oral reading. Furthermore, their larger understanding of text elements, such as story events, characterizations, or connections between text concepts, may influence the expressiveness or emphasis with which they read. If such understanding is present, oral reading may portray that sense of naturalness and effortlessness that seems to characterize the fluent reader.[21]

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[18] Goodman, K. (1986). *What's Whole in Whole Language?* Portsmouth, NH: Heinemann.

[19] Snider, V. E., & Traver, S. G. (1987). The effect of early reading failure on acquisition of knowledge among students with learning disabilities. *Journal of Learning Disabilities, 20,* 351-376

Torgesen, J. K. (1986). Computers and cognition in reading: A focus on deciding fluency. *Exceptional Children, 53*(2), 157-162.

[20] Bear, D. R. (1991). "Learning to fasten the seat of my union suit without looking around": The synchrony of literacy development. *Theory Into Practice, 30,* 149-157.

[21] Schreiber, P. A. (1991). Understanding prosody's role in reading acquisition. *Theory Into Practice, 30,* 158-164.

From this theoretical perspective, the IRPR committee developed an oral reading fluency scale that was used, in addition to measuring rate and accuracy, in describing the quality of students' oral reading. Figure 1.1 presents the fluency scale that was used in the IRPR.

NAEP's Integrated Reading Performance Record
Oral Reading Fluency Scale

Level 4 — Reads primarily in larger, meaningful phrase groups. Although some regressions, repetitions, and deviations from text may be present, these do not appear to detract from the overall structure of the story. Preservation of the author's syntax is consistent. Some or most of the story is read with expressive interpretation.

Level 3 — Reads primarily in three- or four-word phrase groups. Some smaller groupings may be present. However, the majority of phrasing seems appropriate and preserves the syntax of the author. Little or no expressive interpretation is present.

Level 2 — Reads primarily in two-word phrases with some three- or four-word groupings. Some word-by-word reading may be present. Word groupings may seem awkward and unrelated to larger context of sentence or passage.

Level 1 — Reads primarily word-by-word. Occasional two-word or three-word phrases may occur — but these are infrequent and/or they do not preserve meaningful syntax.

The fluency scale used in the IRPR focused on several key elements of oral reading. First, the apparent grouping of words or phrasing produced by students was central to describing their fluency. Phrasing is evident in oral reading through the intonation, stress, and pauses that are exhibited by readers. The beginning and ending of a phrase may be emphasized by the perceived rise and fall of pitch, or simply by the hesitation or pause between phrase endings and phrase beginnings.

A second element of oral reading that was part of rating students' fluency was adherence to the author's syntax or sentence structure. Recognizing the author's syntax can be critical since identical groups of words may represent various meanings when read with different syntactical patterns displayed through intonation, stress placements, or insertions of pauses. Adhering to the author's syntax during oral reading requires the reader to be aware of the ideas that are expressed in the text. Reading a phrase or sentence with a syntactical structure that differs from the one intended may indicate that the reader has lost track of the meaning in the passage.

The third element that played a key role in how fluency was described was the expressiveness of the oral reading. While the IRPR development committee felt that fourth-grade readers should not be expected to provide consistently expressive oral presentations, there was agreement that fluent readers naturally provide some expression in their reading and this should be accounted for in the overall fluency rating. Therefore, the presence of at least some expressiveness was required of the highest fluency-level readers. For example, a minimal attempt to interject a sense of feeling, anticipation, or characterization was expected for the highest level of fluency.

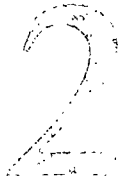
The accuracy of students' reading was one element of oral reading that was not considered as a part of the fluency scale. Although an analysis of students' deviations from text was conducted (data reported in Chapter Three) it was determined that word recognition accuracy should not be considered in the fluency rating. A major reason for this decision is that all readers — even the most fluent — make errors as they read. That is, they often substitute, insert, or omit words from the printed text. However, many educators and researchers have argued that these deviations from the text do not necessarily constitute a lack of understanding.[22] As readers bring their own understanding and experiences with language to the reading situation, it is possible for them to maintain a focus on the text meaning while making slight deviations from the actual printed words. The meaning may remain intact, while the oral production of individual words may be altered. Obviously, those readers who significantly stray from the printed material will have much difficulty making sense of what they are reading and will certainly fail to exhibit fluent reading.

[illegible]

The IRPR' fluency scale was developed to reflect a general consensus on what constitutes proficient, fluent reading. It was designed to include those important elements of reading that are not necessarily captured when oral

[22] Goodman, Y. M., & Goodman, K. S., (1994). To err is human: Learning about language processes by analyzing miscues. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical Models and Processes of Reading*. Newark, DE: International Reading Association.

reading is judged solely on reading rate or accuracy. However, the pace at which reading proceeds and the ability to read the words as they appear on the page remain critical to the overall oral reading competence of students. Consequently, it is important to consider the interrelationship between these three aspects of oral reading — fluency, accuracy, and rate — in gaining a complete picture of students' oral reading abilities. The IRPR special study has documented all three of these characteristics. These data taken together provide a focused picture of the developing reading abilities of our fourth-grade students.



The Oral Reading Fluency of Fourth-Grade Students

Reading competence has typically been measured by examining students' ability to recognize words, to accurately read passages, and to apply text information in answering various kinds of questions on paper-and-pencil tests. However, qualitative examination of oral reading has been recommended as another way of assessing critical aspects of reading ability.[23] The IRPR oral reading study was designed to assess the reading

[23] Hennings, S., & Hughes, K. E. (1992). Building a performance-based assessment system to diagnose strengths and weaknesses in reading achievement. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Potter, M. L., & Wamre H. M. (1990). Curriculum-based measurement and developmental reading models: Opportunities for cross-validation. *Exceptional Children, 57*(1), 16-25.

Tindal, G. et. al. (1992). The effect of curriculum on inferences of reading performance and improvement. *Diagnostique, 18*(1), 69-84.

Wilkinson I., Wardrop J. L., & Anderson R. E. (1988). Silent reading reconsidered: Reinterpreting reading instruction and its effects. *American Educational Research Journal, 25*(1), 127-144.

fluency of fourth-grade students and to examine the relationships between fluency and overall reading proficiency, reading rate, reading accuracy, and reading experiences.

This chapter looks first at the quality of students' oral reading as measured on the IRPR reading fluency scale (described in Chapter One) and relates those results to students' overall reading proficiency and selected reading experiences. Because students who participated in the IRPR had also taken part in the main written assessment, it is possible to examine connections between the wealth of information collected in the national assessment and the results of the IRPR special study. Chapter Three will examine the relationship between fluency, rate, and accuracy.

The Oral Reading Task

Any examination of oral reading must begin with a thorough understanding of the task demands that were a part of the assessment situation. Foremost among these considerations is a review of the passage that was given to students to read aloud. For the IRPR, students were given a passage titled, *Hungry Spider and the Turtle*, which they had also read during the main written assessment. The first 319 words of this passage were designated as the portion to be used in the oral reading analysis. Appendix A displays a copy of the IRPR administrator's guide that includes a copy of this text portion. This passage was selected from among four passages that had been used during a field test of the IRPR. It was chosen by the committee because of its moderate level of difficulty, and because the use of dialogue and the narrative structure of this piece appeared appropriate for eliciting expressive oral reading.

The IRPR interview session, conducted no more than two days after students' participation in the main assessment, provided the second exposure to this passage for every student involved in the special study. Before being asked to read the 319-word portion of this story aloud they were asked to read the complete story again silently in order to answer three comprehension questions. It was after students had answered these questions that the oral reading took place. Thus, students were asked to read the passage aloud only after they had read the passage twice silently — once previously as a part of the main written assessment and once before answering the IRPR comprehension questions. The study was designed in this manner to facilitate students' abilities to read the passage aloud as fluently as possible. This is consistent with the practice of educators and

researchers in evaluating oral reading fluency. Repeated readings are often used to ensure a critical level of comfort for the student.[24]

A small proportion (2 percent) of the students were not asked to read the passage orally. These students had been identified through the initial screening passage used at the beginning of the interview. Based on their oral reading of that less difficult piece, administrators determined that reading a portion of *Hungry Spider and the Turtle* might have been too frustrating for these students.

The oral reading study was audio taped with the full knowledge of the students. Sessions were conducted one-on-one with a trained administrator and took place within students' own school buildings. The directions given to students before they began to read the passage orally were as follows:

> *"I'd like you to read the story aloud as if you're reading it to someone who's never heard it before. Some of the words might be hard to read, but just do the best you can. If you can't figure a word out, you can guess or skip it and go on, but I won't be able to help you with it. I'll tell you when to stop reading. You won't be reading the whole story. Please start at the beginning now."*

Analysis of the Fluency Analysis

The four-level fluency scale described in Chapter One was used to analyze the tapes of students' oral reading. Ratings of 3 or 4 were generally considered "fluent" reading. Students who received this level read, for the most part, in phrases that generally reflected the author's intended sentence structure. While the reading was not perfectly accurate, errors did not detract from the overall reading, and some of the reading was presented with expressive interpretation. Ratings of 1 and 2 indicated that students, in general, could be categorized as nonfluent, reading word-by-word either some or all of the time. With these students, much of the reading seemed awkward to the raters listening to the oral reading tapes.

Table 2.1 presents the percentages of students who were rated at each of the four fluency levels and their average reading proficiencies as measured on the 0 to 500 NAEP reading scale. These percentages represent all the students who read the passage. The 2 percent who had been screened out of the oral reading study are not reflected in these data.

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[24] Bear, D. R. (1991). "Learning to fasten the seat of my union suit without looking around": The synchrony of literacy development. *Theory Into Practice, 30*(3), 149-157.

Percentage of Students at Each Fluency Level and Their Average Proficiencies, Grade 4, 1992 NAEP Integrated Reading Performance Record

FLUENCY LEVEL 1		FLUENCY LEVEL 2		FLUENCY LEVEL 3		FLUENCY LEVEL 4	
% of Students	Average Prof.	% of Students	Average Prof.	% of Students	Average Prof.	% of Students	Average Prof.
7 (0.9)	179 (4.5)	37 (2.0)	207 (2.3)	42 (2.0)	229 (2.0)	13 (1.2)	249 (2.7)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B for details). Percentages may not total 100 percent due to rounding error.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

As measured by the IRPR fluency scale, slightly more than half (55 percent) of the fourth-grade students were rated as fluent — levels 3 and 4, but slightly less than half (44 percent) were rated as nonfluent — levels 1 and 2. Those students rated at the two higher fluency levels displayed competent oral reading abilities characterized by appropriate phrasing and adherence to syntax. Some of these students were rather expressive, while others displayed little expression but read with appropriate phrasing and grouping of words, corresponding to the syntactical structure intended by the author. The overall quality of their oral reading seemed to reflect their understanding of the text — how events and ideas were unfolding in the story.

Conversely, those students who were rated at the lower two levels of fluency displayed awkward, uneasy reading that could best be described as nonfluent. Generally, it was unclear whether these students were actually making sense of the text. In many cases, their efforts appeared to be focused simply on getting through the words on the page. The inappropriate fragmenting of phrases and frequent word-by-word reading seemed to disrupt their ability to construct meaning or convey their understanding through oral reading.

In general, raters were looking for a kind of oral reading that communicated the text meaning to listeners through appropriate phrasing and smooth delivery. A rating of 3, which 42 percent of fourth graders

attained and was considered to be within the fluent range of reading, indicated reading primarily in three- or four-word phrases with little or no expressive interpretation. Only 13 percent of the students actually read the story with at least minimal expressive interpretation necessary for a rating of 4. It would appear then that, while over half of the readers were generally fluent, most of them exhibited little expression. Reading "with expression," often regarded as a desirable trait by primary teachers, was not overly evident in the reading of our nation's fourth graders.

The relationship between oral reading fluency, as measured with the IRPR fluency scale, and students' overall reading proficiency seemed quite striking. Increasingly higher levels of fluency were associated with increasingly higher overall reading proficiency. Students with a fluency level of 2 had higher average reading proficiencies than level 1 readers. Level 3 readers also demonstrated, on average, higher reading achievement than students with lower fluency ratings. And students who were rated as the most fluent — level 4 — exhibited the highest average reading proficiencies. These data corroborate the findings of researchers who have suggested a strong link between reading fluency and reading achievement.[25]

Apparently, those students who demonstrated a solid grasp of text meaning in their oral reading, through phrasing, intonation, and at least minimal expression, were among the best readers. They, in fact, were able to construct meaning from text in an efficient manner as confirmed by their performance on the main NAEP reading assessment. These results provide some indication that reading fluency may have a strong association with overall reading abilities.

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[25] Stayter, F. Z., & Allington, R. I. (1991). Fluency and the understanding of texts. *Theory into Practice, 30*(3), 143-148.

Clay, M. M. (1985). *The early detection of reading difficulties* (3rd ed.). Portsmouth, NH: Heineman, Smith.

Bowey, J. A., (1984). The interaction of strategy and content in children's oral reading. *Journal of Psycholinguistic Research, 13*, 99-117.

Exploring the Relationship Between Fluency and Reading Experiences

Given the important connection between reading fluency and reading proficiency suggested by these data, it is worthwhile to examine the experiences students have that may be related to reading fluency. As a part of the main assessment, students were asked a series of questions about their experiences in and out of school related to reading. By looking closely at the self-reported literacy experiences of fluent and nonfluent readers, educators and parents can be more informed in determining how to support children's fluency development. The reading experiences that were examined in these analyses are reading outside of school, taking books out of the library for enjoyment, reading self-selected books in class, and reading aloud in class.

Fluency and Reading Outside of School. Research has suggested that fluent reading, in part, may be a product of frequent practice in reading.[26] Clearly, the more reading experiences students have had, the more comfortable they are likely to be in reading orally. Their expanded experiences with narrative text structures and language patterns may contribute to fluent reading.

Table 2.2 portrays the relationship between students' responses to a question about their independent reading and their oral reading fluency. Percentages of students who read books outside of school during the previous month are reported by fluency level.

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[26] Anderson, R. C., Wilson, P. T., & Fielding, L. G. (1988). Growth in reading and how children spend their time outside of school. *Reading Research Quarterly, 23*(3), 285-303.

Watkins, M. W., & Edwards, V. A. (1992). Extracurricular reading and reading achievement: The rich stay rich and the poor don't read. *Reading Improvement, 29*(4), 236-242.

Table 2.2 — Fluency and Reading Outside of School

Percentage of Students at Each Fluency Level by the Number of Books They Reported Reading Outside of School Last Month, Grade 4, 1992 NAEP Integrated Reading Performance Record

	NUMBER OF BOOKS READ OUTSIDE OF SCHOOL LAST MONTH			
Fluency Level	No Books	1 or 2 Books	3 or 4 Books	5 or More Books
Fluent				
4 (13 percent)	1 (0.6)	23 (4.3)	23 (3.4)	53 (4.2)
3 (42 percent)	6 (1.2)	27 (2.5)	26 (2.4)	41 (2.9)
Nonfluent				
2 (37 percent)	12 (2.0)	28 (3.1)	18 (2.4)	42 (3.0)
1 (7 percent)	22 (5.8)	15 (4.3)	27 (5.3)	36 (6.5)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (See Appendix B for details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

The results indicate a significant relationship between oral reading fluency and reading books outside of school. Those students who were rated at the lowest level of fluency were more likely to report not reading any books outside of school than were students in the top two levels of fluency. Essentially, these data suggest that fourth graders who were rated as fluent on the IRPR scale (levels 3 and 4) were more likely to have read at least one book on their own in the previous month than were the least fluent readers (level 1).

Because it is inappropriate to infer causal relationships solely from NAEP data, interpretations of these results must also consider that the fluent readers may pursue reading as an independent activity more frequently because it is a comfortable, enjoyable experience for them. Nevertheless, most educators would express concern for those students who were rated as nonfluent in their oral reading (levels 1 and 2) and did not report reading any books on their own in the previous month. These students may have become trapped in a cycle of not reading because it is difficult for them, and yet may not be able to increase their reading ability

because they find reading to be frustrating and thus avoid it as a recreational activity.[27]

Fluency and Using the Library for Enjoyment. A similar relationship between independent or recreational reading habits and fluency is evident in the data presented in Table 2.3. Students were asked how often they take books out of the library for their own enjoyment. In past NAEP reports, a strong relationship between library use and reading proficiency was not always evident.[28] According to IRPR results, significantly more students who had been rated as nonfluent (levels 1 and 2) were likely to report that they had never taken a book out of the library than were students who had been rated at the highest level of fluency (level 4). Also, level 2 readers were more likely to report never doing so than were level 3 readers. Although using the library for enjoyment on a daily basis was not associated with higher fluency levels, the most fluent readers (level 4) were more likely than readers at levels 1, 2, or 3 to take books out of the library for enjoyment once or twice a week. Furthermore, never utilizing the library resources in this way did appear to have some relationship with nonfluent reading. Nearly one-fourth (24 percent) of the least fluent readers (level 1) said they never used the library to borrow reading materials for their own enjoyment. Only 6 percent of the most fluent readers (level 4) reported the same lack of library use.

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[27] Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*, 360-407.

Snider, V. E., & Tarver, S. G. (1987). The effects of early reading failure on acquisition of knowledge among students with learning disabilities. *Journal of Learning Disabilities, 20*, 351-356, 373.

Thompson, M. E. (1987). *What happens when readers do not read? The problem of reluctant readers.* Paper presented at the Annual Meeting of the North Central Reading Association. Notre Dame, IN.

[28] Foertsch, M. A. (1992). *Reading In and Out of School: Factors Influencing the Literacy Achievement of American Students in Grades 4, 8, and 12, in 1988 and 1990.* National Center for Education Statistics. Washington, DC: Government Printing Office.

Table 2.3 — Fluency and Using the Library for Enjoyment

Percentage of Students at Each Fluency Level by How Frequently They Reported Taking Books Out of the Library for Their Enjoyment, Grade 4, 1992 NAEP Integrated Reading Performance Record

	FREQUENCY OF TAKING BOOKS OUT OF THE LIBRARY FOR ENJOYMENT			
Fluency Level	Never	Once or Twice a Month	Once or Twice a Week	Everyday
Fluent				
4 (13 percent)	6 (2.2)	18 (3.2)	65 (5.6)	11 (3.8)
3 (42 percent)	12 (1.7)	27 (2.9)	48 (3.1)	12 (1.7)
Nonfluent				
2 (37 percent)	20 (2.0)	20 (2.5)	45 (3.0)	14 (1.5)
1 (7 percent)	24 (5.2)	18 (3.9)	42 (5.9)	17 (3.8)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B for details). Percentage may not total 100 percent due to rounding error.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment Integrated Reading Performance Record

Fluency and Reading Self-Selected Books in Class. In addition to independent or recreational reading activities, students' classroom experiences can certainly play a role in the development of reading fluency. One of these experiences is reading self-selected books as a part of reading instruction. Students in the main assessment were asked how often their teachers assign time to read books they have chosen. The relationship between their responses and their reading fluency is presented in Table 2.4.

Table 2.4 — Fluency and Reading Self-Selected Books

Percentage of Students at Each Fluency Level by How Frequently They Reported Their Teachers Give Them Time to Read Books They Have Chosen, Grade 4, 1992 NAEP Integrated Reading Performance Record

	FREQUENCY OF READING BOOKS THEY HAVE CHOSEN IN CLASS			
Fluency Level	Never	Once or Twice a Month	Once or Twice a Week	Everyday
Fluent				
4 (13 percent)	4 (1.8)	3 (1.4)	29 (5.6)	64 (3.8)
3 (42 percent)	5 (1.1)	9 (1.6)	22 (2.4)	64 (3.0)
Nonfluent				
2 (37 percent)	6 (1.6)	16 (2.3)	29 (2.7)	48 (2.8)
1 (7 percent)	13 (4.4)	10 (3.3)	40 (5.2)	37 (5.8)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B for details). Percentages may not total 100 percent due to rounding error.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

Nearly two-thirds (64 percent) of the fluent readers at levels 3 or 4 indicated that their teachers assigned them time to read books of their own choosing every day. This was a significantly larger proportion than the 37 percent of the least fluent readers (level 1) who also reported reading books of their own choosing everyday in school.

Opportunities to read self-selected books may be considered among the most authentic of literacy activities that can be given to children in their classrooms.[29] According to these data, our most fluent fourth graders are being given many opportunities to pursue their own reading experiences as a part of reading instruction; however, this is less true for their nonfluent counterparts (levels 1 and 2). In fact, nearly one-fourth (23 percent) of students who were rated as the least fluent reported never reading books of their own choosing in class or doing so only a couple of times a month.

[29] Hiebert, E. H. (1994). Becoming literate through authentic tasks: Evidence and adaption. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.). *Theoretical Models and Processes of Reading*. Newark, DE: International Reading Association

Fluency and Reading Aloud in Class. Other NAEP reports have indicated that silent reading is used nearly everyday in the majority of fourth-grade classrooms.[30] This may be partially due to the assertion of some educators that silent reading is more positively related than oral reading to reading achievement.[31] Nevertheless, as displayed in Table 2.5, many students reported relatively frequent use of oral reading. Forty-one to 48 percent of fourth-graders reported being asked by their teachers to read aloud in class. It is noteworthy that there were no significant differences between fluency levels with how frequently students read orally. Fluent readers were being asked to read aloud in class about as frequently as their nonfluent counterparts. It may be that merely having students read aloud is not, in itself, closely associated with developing reading fluency.

Table 2.5 — Fluency and Reading Aloud in Class

Percentage of Students at Each Fluency Level by How Frequently They Reported Their Teachers Ask Them to Read Aloud in Class, Grade 4, 1992 NAEP Integrated Reading Performance Record

	FREQUENCY OF TEACHERS ASKING STUDENTS TO READ ALOUD			
Fluency Level	Never	Once or Twice a Month	Once or Twice a Week	Everyday
Fluent				
4 (13 percent)	12 (2.9)	12 (3.2)	35 (3.7)	41 (3.9)
3 (42 percent)	12 (2.0)	13 (2.0)	27 (3.1)	48 (3.3)
Nonfluent				
2 (37 percent)	15 (2.2)	12 (2.0)	26 (2.8)	47 (3.5)
1 (7 percent)	23 (4.6)	10 (4.4)	26 (6.1)	41 (6.8)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B for details). Percentages may not total 100 percent due to rounding error.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

[30] Mullis, I. V. S., Campbell, J. R., & Farstrup, A. E (1993). *NAEP 1992 Reading Report Card for the Nation and the States*. National Center for Education Statistics. Washington, DC: Government Printing Office.

[31] Leinhardt, G., Zigmond, N., & Cooley, W. W. (1981). Reading Instruction and its effects. *American Educational Research Journal, 18*, 343-361.

Mendak, P. A. (1986). The use of silent reading in the primary grades. *The Reading Teacher*, 636-639.

One reason why there was little relationship between reading aloud in class and oral reading fluency may be the wide array of approaches to oral reading that may be used by teachers as a part of instruction. From these data alone, it is impossible to determine the exact nature of the oral reading activities that were being used. Some methods, such as those referred to as "round robin reading," in which students take turns reading portions of a passage, have been criticized for having too little focus on meaning.[32] However, other studies have demonstrated the benefit of certain oral reading procedures over others. Some of this research indicates that the most successful oral reading methods are those that emphasize conveying meaning rather than simply reading accurately.[33] It has also become apparent in recent research that the manner in which teachers react and respond to students' oral reading performances may have some impact on their fluency development. For example, constant interruptions from the teacher to provide correction may adversely affect students' ability to gain meaning and to read fluently.[34]

Summary

The IRPR data on oral reading fluency and its relationship to reading proficiency presented in this chapter suggest that much can be learned about students' reading abilities by actually listening to them read. The ratings of students' fluency that were based on the phrasing, syntax, and expressiveness of their oral reading were closely associated with their performance on the NAEP assessment of reading comprehension. Although only one text was presented to students and the findings may have been slightly different with another text, results suggest that students who are able to demonstrate fluency in their oral reading of a passage are likely to demonstrate higher levels of understanding.

Fewer than one-half (44 percent) of fourth graders were categorized as nonfluent in their reading of a passage that they had read twice silently.

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[32] Beach, S. A. (1993). Oral reading instruction: Retiring the bird in the round. *Reading Psychology, 14,* 333-338.

[33] Anderson, R. C., Wilkinson, I. A. G., & Mason, J. A. (1991). A microanalysis of small-group, guided reading lesson: Effects of an emphasis on global story meaning. *Reading Research Quarterly, 26,* 417-441.

[34] Hoffman, J. V., & Isaacs, M. E. (1991). Developing fluency through restructuring the task of guided oral reading. *Theory Into Practice, 30,* 185-194.

Since measuring reading fluency in this way may be a relatively new approach in examining oral reading, it is unclear whether these results reflect a critical lack of important skills or simply portray an aspect of reading development at that age. Nevertheless, the oral readings by students rated at fluency levels 1 and 2 reflected little evidence that they understood the passage. In addition, these students' awkward grouping of words failed to portray the author's intended use of language or the ideas that were being developed in the story. While little research has been conducted to determine typical levels of fluency for students at this age, some educators recognize potential problems for readers who do not ". . . make the transition from effortful to fluent reading rather smoothly during the first few years of reading instruction."[35]

Readers make use of a variety of information, including the text meaning, their knowledge of language syntax, as well as the visual information they perceive from the printed page as they read through a passage. Drawing on this information, readers anticipate syntactic patterns in the passage, as evidenced by their phrasing and expressive interpretation. Students who read with little reflection of syntactic patterns may not be effectively accessing all these sources of information and may, in fact, be losing a portion of the text's meaning.

Researchers have held that being able to anticipate the language and text structure of passages depends, in part, on readers' prior knowledge and experiences with language and texts, as well as their background with the passage topic. Based on responses to each of the three questions about students' reading experiences, there was evidence that oral reading fluency was related to at least some participation in literacy-supportive activities. For example, more than one-fifth (22 percent) of the least fluent readers reported that they had not read one book outside of school in the previous month. This was true for only 1 percent of the most fluent readers. A similar pattern was seen in students' use of the library as a resource for recreational reading materials. Nearly one-fourth (24 percent) of the least fluent readers said they had never taken a book out of the library for enjoyment. Only 6 percent of the most fluent readers reported the same lack of library use.

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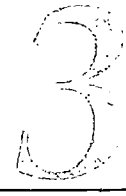
[35] Hoffman, J. V., & Isaacs, M. E. (1991). Developing fluency through restructuring the task of guided oral reading. *Theory Into Practice, 30*(3), 185-194.

Looking at classroom-situated activities, reading orally in class appeared to be fairly common among fourth graders. However, the frequency of this activity was not significantly associated with how fluently students read. Conversely, there was some indication that other types of instructional practices may be associated with fluency. Nearly two-thirds (64 percent) of the fluent readers at levels 3 and 4 reported having daily opportunities to read books they had chosen in their classes. Only 37 percent to 48 percent of the nonfluent readers reported having as frequent an opportunity to do so. It seems clear that in their classroom instruction, nonfluent readers are asked to do less reading involving personal choice than are their fluent reading counterparts. This may be of some concern, since being able to select one's own reading materials can be especially motivating and is likely to sustain reading for a longer period of time.[36] Fourth-grade students who display the type of oral reading that was characterized as nonfluent in this study may need as much, if not more, motivation and opportunity for meaningful reading activities as their fluently reading counterparts.

[36] Atwell, N. (1987). *In the Middle: Writing, Reading, and Learning with Adolescents*. Portsmouth, NH: Heinemann.

Carbo, M. (1990). Igniting the Literacy Revolution through Reading Styles. *Educational Leadership*, 26-29.



Oral Reading Accuracy and Rate

Accuracy and speed may be considered essential building blocks of reading fluency. If readers have too much difficulty recognizing and reading individual words, their ability to gain overall meaning from a passage will be seriously hampered.[36] As readers pause to figure out, or decode, unfamiliar words, the ideas that were developing within the sentence or across that portion of the passage may be disrupted — having a negative impact on students' ability to understand the text. Maintaining a steady rate of reading can be central to the process of comprehending. Gaining meaning from the text requires readers to make connections between text ideas. If reading proceeds too slowly or mechanically, these connections may become difficult or impossible to make.[37] Because of the

[36] Samuels, S. J. (1994). Toward a theory of automatic information processing in reading, revisited. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.) *Theoretical Models and Processes of Reading*, 816-837. Newark DE: International Reading Association.

[37] Berliner, D. & Casanova, U. (1988). Should we raise the reading speed limit? *Instructor*, 97, 14-15.

important connection between these aspects of oral reading and their relationship to overall proficiency, measures of accuracy and rate were taken from fourth-grade students' oral reading, in addition to the rating of overall fluency described in the previous chapter. Traditionally, these two aspects of oral reading — accuracy and rate — have been the primary indicators of oral reading ability.

Students' reading accuracy in the IRPR was determined through an analysis of their oral reading deviations from the words in the text. This anal . . was accomplished after the actual interview sessions were conc . ed, using the taped recordings of students' oral reading. Trained raters listened to the tapes and recorded students' oral renditions of the passage according to a fairly standard method of notating oral reading performances. On a type-script of the passage, raters documented any oral reading deviations from the text on a word-by-word basis. A deviation from text was considered to be any oral production of words by the student that differed from what was in the passage. After transcribing students' oral productions of words that deviated from the passage, raters revisited each deviation on the type-script for further analysis. Every deviation was then classified according to type — substitution, omission, or insertion. Also, a determination was made as to the impact of each individual deviation from the text on the student's ability to understand the sentence's meaning or the overall meaning of the passage. Finally, a note was made of each deviation that had been self-corrected by the student. (See Appendix C for a more detailed discussion of the oral reading analysis procedures.)

The rate of students' oral reading was measured by simply timing the taped readings and by calculating a words-per-minute rate based on the time and the total number of words read. It is important to remember that students were not instructed to read the passage as quickly as possible. Rather, they were instructed to read the story as if they were reading to someone who had never heard it before. Consequently, the reading rate that was observed for each student should not be construed as this student's fastest. Instead, the reading rate may be viewed as one that represents a somewhat natural pace for students — the rate at which students might read when trying to do their best oral reading in a performance situation.

Fourth-Graders' Accuracy with the IRPR Passage

Determining what constitutes adequate levels of accuracy has been the source of some debate among educators, researchers, and theorists.

Numerous classroom instruments that have been developed to identify students' reading competencies have used the percentage of words read correctly as a criterion.[38] With many of these informal instruments, reading less than 95 percent of the words correctly is considered to be an inadequate level of accuracy that may not provide readers with sufficient text information to understand the passage.[39] However, other educators have argued that deviating from the text, in itself, may not represent a serious or disruptive occurrence in the reading process. They believe that some deviations reflect the impact of prior knowledge and experiences which readers draw upon in constructing meaning, as well as the thinking processes engaged during reading. Therefore, the nature of these deviations should be considered in determining students' ability to read and understand the passage.[40]

The IRPR analysis of oral reading accuracy allows us to examine the connection between accuracy of reading the IRPR passage and overall reading proficiency as measured by the main NAEP reading assessment. Moreover, it is possible to see if oral reading deviations from text that resulted in a change of text meaning are related to overall proficiency in the same way as all oral reading deviations from text. Table 3.1 presents data on the number of total deviations and deviations that resulted in meaning change that were produced by fourth graders in their oral reading of the IRPR passage. Average reading proficiency associated with the different levels of accuracy is presented along with these percentages.

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[38] Lipson, M. Y., & Wixson, K. K. (1991). *Assessment and Instruction of Reading Disability: An Interactive Approach*, 182-184. New York: HarperCollins.

[39] Harris, A.J., & Sipay, E.R. (1985). *How to Increase Reading Ability: A Guide to Developmental and Remedial Methods*, 193-203. New York: Longman.

[40] Goodman, Y. M., & Goodman, K. S., (1994). To err is human: Learning about language processes by analyzing miscues. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical Models and Processes of Reading*, 104-123. Newark, DE: International Reading Association.

Clay, M. M. (1993). *An Observation Survey of Early Literacy Achievement*. Auckland, New Zealand: Heinmann Education.

Table 3.1 — Fourth-Graders' Oral Reading Accuracy

Percentage of Students at Different Levels of Accuracy (Oral Reading Deviations from the Text) and Their Average Reading Proficiency, Grade 4, 1992 NAEP Integrated Reading Performance Record

	0-4 DEVIATIONS		5-9 DEVIATIONS		10-14 DEVIATIONS		15-19 DEVIATIONS		20 OR MORE DEVIATIONS	
	99% ACCURATE		97% ACCURATE		96% ACCURATE		94% ACCURATE		LESS THAN 94% ACCURATE	
	% of Students	Aver. Prof.	% of Students	Aver. Prof.	% of Students	Aver. Prof.	% of Students	Aver. Prof.	% of Students	Aver. Prof.
Total Deviations from Text	16 (2.5)	219 (4.6)	21 (1.3)	230 (2.8)	20 (1.3)	224 (3.0)	20 (1.4)	214 (2.7)	23 (1.4)	207 (2.2)
Total Deviations from Text Resulting in a Meaning Change	41 (2.3)	226 (2.4)	37 (1.8)	219 (2.6)	14 (1.3)	205 (2.7)	5 (0.9)	197 (5.4)	2 (0.4)	177 (6.9)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B for details). Percentages may not total 100 percent due to rounding error.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

There were a total of 319 words in the portion of the passage that students were asked to read aloud (see Appendix A). Therefore, students who exhibited only four or fewer deviations from the text could be considered as reading the passage with approximately 99 percent accuracy. Sixteen percent of fourth graders in the IRPR read the *Hungry Spider and Turtle* passage with this level of accuracy. Fifty-seven percent of the fourth graders read this passage with at least 96 percent accuracy. That is, they made fewer than 15 deviations from the text in their oral reading. It seems quite likely that these students had adequate recognition of words in the passage and may be considered as demonstrating a relatively high, if not sufficient, level of accuracy.

The remaining 43 percent of the students read correctly 95 percent or fewer of the words (15 or more deviations). Of some concern, perhaps, are the 23 percent of students who fell below 94 percent accuracy (20 or more deviations). This would suggest that nearly one-fourth of the students were deviating from the text with at least one out of every twenty words. As described earlier, some educators have suggested that an error rate of more than 5 percent may indicate a critical level of difficulty in children's

reading.[41] Given this rate of deviation (whether or not individual deviations resulted in a meaning change), it seems plausible that the cumulative effect of these deviations would have had some negative consequence to the overall reading experience. Indeed, these fourth graders did demonstrate significantly lower average reading proficiency. This may suggest that, on average, less than 94 percent accuracy does not provide readers with adequate text information for gaining meaning.

Considering the number of deviations that resulted in a meaning change provides a different perspective for viewing students' oral reading accuracy. By disregarding those deviations that did not change the meaning of the passage, these students actually appeared to be quite accurate in their reading of this passage. In fact, 41 percent read the passage with only four or fewer meaning-change deviations — a 99 percent level of accuracy. Only 7 percent of the students had 15 or more deviations that disrupted the meaning of the passage.

The relationship between oral reading accuracy and overall reading proficiency would appear to be somewhat dependent on the nature of deviations that readers make. When the total number of readers' deviations were considered, (whether or not they resulted in a meaning change), the relationship between reading proficiency and accuracy seemed somewhat vague. For example, there were no significant differences in the overall reading proficiency of students with zero to four, five to nine, or 10 to 14 deviations from text.

The pattern shifts slightly, however, when only deviations that resulted in a meaning change are considered. Those students with nine or fewer deviations resulting in a meaning change demonstrated the highest average reading proficiency of all students. Those students with the fewest number of meaning-changing deviations (zero to four) had higher average proficiencies than students with 10 to 14, 15 to 19, and 20 or more of the same type of disruptive deviations. It would seem then, that making errors when reading orally may have been only minimally related to overall reading proficiency, unless the errors resulted in some disruption to the meaning-making process — in which case, a more direct relationship was observed.

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[41] Clay, M. M., & Johnston, P. H. (1992). Making Sense of Records of Oral Reading. In P. H. Johnston (Ed.), *Constructive Evaluation of Literate Activity*, 83-94. New York: Longman.

Many times, readers recognize that they have deviated from the text and then proceed to correct their original production of the word or group of words. Students' deviations from the IRPR passage were coded for evidence of self-correction. A deviation was considered to be self-corrected if a student's final attempt produced the expected response. The frequency with which readers correct their deviations and the type of deviations that elicit self-corrections provides further information about the nature of students' reading abilities. Table 3.2 presents the proportion of deviations that were self-corrected, according to whether or not they had resulted in a meaning change.

Table 3.2 — Fourth-Graders' Self-Corrections

Proportion of Oral Reading Deviations from the Text that were Self-Corrected and Average Proficiencies, Grade 4, 1992 NAEP Integrated Reading Performance Record

	LESS THAN 25% SELF-CORRECTED		25%-49% SELF-CORRECTED		50%-75% SELF-CORRECTED		MORE THAN 75% SELF-CORRECTED	
	Percentage of Students	Average Proficiency	Percentage of Students	Average Proficiency	Percentage of Students	Average Proficiency	Percentage of Students	Average Proficiency
Proportion of Deviations Resulting in a Meaning Change That Were Self-Corrected	41 (1.8)	214 (2.4)	35 (2.0)	217 (2.6)	20 (1.7)	232 (3.2)	4 (0.7)	235 (5.5)
Proportion of Deviations *Not* Resulting in a Meaning Change That Were Self-Corrected	52 (1.9)	221 (2.3)	32 (1.6)	217 (2.3)	13 (1.4)	220 (3.5)	3 (0.8)	228 (5.3)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B details).

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

The overwhelming majority of fourth-graders reading the IRPR passage corrected fewer than half of their deviations, whether or not those deviations resulted in a change of meaning. Seventy-six percent of the students self-corrected less than half of the deviations that resulted in a meaning change and 84 percent corrected less than half of the deviations that did not result in a meaning change. The way in which students handled their deviations may have been partially attributable to the fact that more

than three-fourths of the students were reading the passage with at least 94 percent accuracy (see Table 3.1). If students were experiencing few disruptions in their oral reading due to deviations, they may have felt less compelled to correct the deviations that were made. An alternative explanation is that readers at this level are so efficiently and rapidly processing the text that self-corrections are covert and cannot be observed.

There was some indication that students tended to make fewer self-corrections when their deviations did not result in a meaning change. Fifty-nine percent of them corrected one-fourth or more of their deviations that changed text meaning, compared to only 48 percent when deviations did not result in a meaning change. Many educators have suggested that readers do not always, nor should they, stop to correct deviations from the text.[42] As readers interact with the text and begin to build meaning, they draw on their own familiarity with language systems and patterns. A reader who is proficiently gaining meaning from a passage may deviate from the text on certain words, but may compensate for these deviations by relying on his or her experience with language and evolving understanding of the passage. Sometimes, appropriate substitutions are made that provide essentially the same meaning. Other times, readers who omit certain words may accommodate missing information by anticipating or predicting what is happening in the story. If their comprehension of the passage is adequate, these minor deviations will not significantly affect readers' overall understanding.[43]

These data provide some evidence that proficient readers are more attentive to deviations that change the meaning of the passage than are their less proficient counterparts. The average reading proficiency of students who corrected more than half of their meaning-change deviations was significantly higher than that of students who corrected less than half of their meaning-change deviations. It appeared that proficient readers tended to self-correct deviations that interfered with their understanding.

Overall proficiency of students seemed to have little relationship with how many deviations were self-corrected when meaning change had not occurred. There was no significant difference in the average proficiencies of

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[42] Thompson, G. B. (1984) Self-corrections and the reading process: An evaluation of evidence. *Journal of Research in Reading*, 7(1), 53-64.

[43] Taft, M.L., & Leslie, L. (1985). The effects of prior knowledge and oral reading accuracy on miscues and comprehension. *Journal of Reading*, 17(2), 163-179.

students based on the number of self-corrected deviations that did not result in a meaning change. Previous research has suggested that proficient readers tend to ignore nondisruptive deviations.[44] That is, skilled readers may be aware that meaning was not changed as a result of the deviation and, therefore, do not expend the time or energy to self-correct. Conversely, less skilled readers who are not focused on gaining meaning may be aware of the deviation, but may not realize its lack of impact on meaning. As a result, they do make the correction, using up attention and time in the process — and that may lead to further disruptions in their reading. The IRPR data, however, suggest that good and poor readers may respond to non-meaning change deviations in the same manner, at least in a performance situation like the IRPR.

The data on fourth graders' deviations from the text and their self-corrections support the notion that meaning change may be the most critical factor in evaluating oral reading. A positive relationship was observed between fewer meaning change deviations and higher reading proficiency. However, the relationship between total deviations and reading proficiency was not as consistent. Furthermore, correcting those deviations that resulted in a change of meaning appeared to be more related to proficient reading than did correcting deviations that did not result in meaning change.

Fourth-Graders' Reading Rate with the IRPR Passage

The rate at which a passage is read may reflect the reader's ability to decode the words, to think about the ideas, and to construct personal meaning from the text. Some educators in the past have identified rate as an important element of reading development.[45] More recently, there has been a resurgence of interest in reading rate and its relationship to overall reading ability.[46] The IRPR reading rate data, based on fourth-grade students'

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[44] McNaughton, S. (1988). A history of errors in the analysis of oral reading behavior. *Educational Psychology: An International Journal of Experimental Educational Psychology, 8*(1,2) 21-30.

[45] Gray, W. S. (1915). *Standardized Oral Reading Paragraphs.* Bloomington, IL: Public School Publishing Co.

[46] Carver, R.R. (1992). What do standardized tests of reading comprehension measure in terms of efficiency, accuracy, and rate? Reading Research Quarterly, 27(4), 346-359.

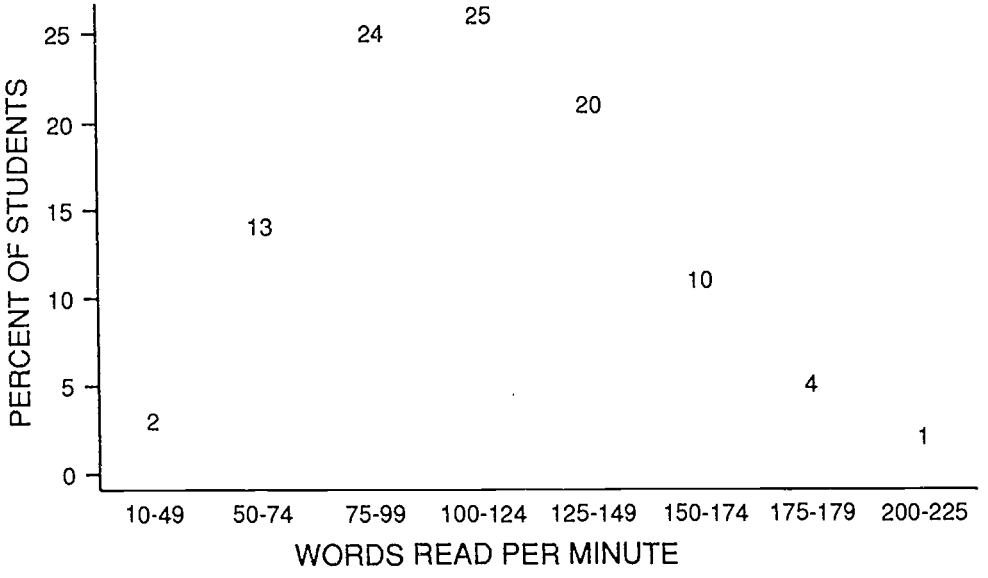
Potter, M. L., & Wamre, H. M. (1990). Curriculum-based measurement and developmental reading models: Opportunities for cross-validation. *Exceptional Children, 57*, 16-25.

Pikulski, J. J. (1988). Is there any benefit in trying to obtain rate of oral or silent reading measures? *Reading Teacher, 42*, 243.

reading of a narrative text with which they demonstrated a fairly high level of accuracy, provide important information for educators concerned with this aspect of oral reading. Figure 3.1 presents the distribution of fourth-graders' oral reading rate with the passage, *Hungry Spider and the Turtle.*

Figure 3.1 — Reading Rate Distribution

Reading Rate Distribution of Fourth-Graders on *Hungry Spider and the Turtle*, Grade 4, 1992 NAEP Integrated Reading Performance Record



Nearly two-thirds (64 percent) of the fourth-grade students read this passage at a pace of 124 words per minute or slower. Establishing standards for oral reading rate is difficult, due to variations in materials and contexts. Compared to traditional standards for reading rates of between 120 to 150 words per minute (wpm), the performance of many of the fourth graders in the IRPR was generally slower than expected.[47] However, more recent studies suggest that fourth-graders' reading rates may not be as fast as once

[47] Taylor, S.E. (1965). Eye movements in reading: Facts and fallacies. *American Educational Research Journal, 34,* 193-205

thought. In at least one study, the range of oral reading rates for fourth graders reading a moderately difficult passage was 74 to 128 wpm with a mean of 101 wpm.[48]

One difference with the IRPR study was that oral reading took place after students had read the passage twice before silently. This, perhaps, should have resulted in faster rates due to students' familiarity with the passage. Of course, students in the IRPR study were not asked to read the passage as quickly as possible. They were simply instructed to read the story as if they were reading it for someone who had never heard it before. It was expected that this would result in a relatively natural pace for students, not one that was artificially forced. It is possible that students viewed the situation simply as a performance and adjusted their reading rate accordingly.

At the upper end of the rate distribution, only 15 percent of the fourth graders were reading at least 150 words per minute. Conversely, approximately 15 percent were reading no faster than 74 words per minute. At just slightly more then one word per second, this may be considered to be a pace at which it would be difficult to keep track of ideas as they are developing within the sentence and across the passage.

Recent studies have provided some documentation for a connection between reading rate and reading comprehension.[49] The IRPR data allow for further examination of this connection by looking at the average reading proficiency of students with various reading rates on the IRPR passage. According to the data in Table 3.3, the results of the IRPR study support the notion that faster readers tend also to have higher levels of comprehension. In reading the IRPR passage, the nearly one-third (34 percent) of fourth graders reading at least 130 words per minute had the highest average reading proficiency. For the remaining students, a consistent pattern was apparent in the relationship between proficiency and rate — on average slower readers demonstrated lower reading proficiency.

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[48] Allen, D. D. (1988). *Oral and Silent Rates of Fourth Grade Students: Are All Good Readers Fast Readers.* Paper presented at the Annual Meeting of the National Reading Conference, Tucson, AZ.

[49] Rasinski, T. V. (1990). *Predicting reading rates that correspond to independent, instructional, and frustration reading levels for third and fifth grade students.* Paper presented at the 40th annual meeting of the National Reading Conference, Miami, FL.

Table 3.3 — Oral Reading Rates and Average Proficiencies

Students' Oral Reading Rates on the IRPR Passage and Their Average Proficiencies, Grade 4, 1992 NAEP Integrated Reading Performance Record

WORDS READ PER MINUTE (W.P.M.)							
LESS THAN 80 W.P.M.		80-104 W.P.M.		105-129 W.P.M.		130 OR MORE W.P.M.	
Percentage of Students	Average Proficiency	Percentage of Students	Average Proficiency	Percentage of Students	Average Proficiency	Percentage of Students	Average Proficiency
19 (1.7)	189 (2.8)	25 (1.8)	208 (1.9)	23 (1.7)	222 (2.5)	34 (2.1)	244 (2.2)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B for details). Percentages may not total 100 percent due to rounding error.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

Fluency's Association with Accuracy and Rate

The IRPR fluency scale (described in Chapter 1) focused on qualitative aspects of oral reading, like phrasing and expressiveness. Reading the passage was evidently not an extremely difficult task for those fourth graders rated as highly fluent. These students not only seemed to understand what they were reading, but could actually perform their reading at a natural, comfortable pace. It would seem, therefore, that fluent oral reading must necessarily involve some level of accuracy and rate that adequately supports the reader's ability to gain meaning from the text.

Table 3.4 displays the relationship between fourth-graders' oral reading fluency, their accuracy, and their reading rate.

Table 3.4 — Fluency's Relationship to Accuracy and Rate

Average Number of Oral Reading Deviations from Text and Words Per Minute by Students Oral Reading Fluency*, Grade 4, 1992 NAEP Integrated Reading Performance Record

	NONFLUENT		FLUENT	
	Fluency Level 1 (7 percent)	Fluency Level 2 (37 percent)	Fluency Level 3 (42 percent)	Fluency Level 4 (13 percent)
Average Number of Deviations	19 (1.7) 94% accurate	18 (0.6) 94% accurate	13 (0.3) 96% accurate	9 (0.4) 97% accurate
Average Words Read Per Minute	65 (2.0)	89 (1.0)	126 (1.5)	162 (2.4)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B for details).

*For a complete description of the IRPR Fluency Scale, see Chapter 1.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

According to these results, a fairly strong relationship is evident between oral reading fluency and both accuracy and rate. Those students who were rated as fluent (levels 3 and 4) had an average of 13 or fewer deviations from text — at least 96 percent accuracy in their oral reading of the passage. Nonfluent readers (levels 1 and 2) produced 18 or more deviations on average — less than 95 percent accuracy in their oral reading. Essentially, fluent reading was observed when students on average attained more than 95 percent accuracy in reading the passage.

In addition to being more than 95 percent accurate, fluent readers of the IRPR passage had an average reading rate of at least 126 words per minute. Nonfluent readers were significantly slower in their reading than fluent readers, with an average rate of no more than 89 words per minute. The average reading rate discrepancy between the most fluent (level 4) readers and the least fluent (level 1) readers was nearly 100 words per minute. Oral reading that is at the pace of the least fluent readers (65 words per minute), compared to the pace of the most fluent readers (162 words per minute), appears slow, strained, and displays little connection between .

words or ideas in the text. It seemed to listeners that these least fluent readers were doing little more than reading the words one-by-one, in the order they appeared on the page.

Beyond looking at the average measures of accuracy and rate for students at each fluency level, it is important to consider the range of performance evident within each fluency level. Not all the fluent readers were among the most accurate or the fastest of their peers. Table 3.5 presents the range in number of deviations produced by students at each fluency level.

Compared to their less fluent counterparts, highly fluent readers were more likely to be accurate. However, the data suggest that being fluent in reading the passage did not guarantee being completely accurate. In fact, only one-fourth of the most fluent readers (level 4) came close to reading the passage perfectly — producing only zero to four deviations from the text. Furthermore, only 8 percent of level 3 readers, also considered to be fluent in their oral reading, produced only zero to four deviations. In many cases, fluent readers seemed to be making as many deviations as nonfluent readers. Sixteen percent of level 4 readers and 36 percent of level 3 readers were reading the passage with 15 or more deviations.

Table 3.5 — Fluency and Accuracy

Percentage of Students at Each Fluency Level* by Five Levels of Accuracy, Grade 4, 1992 NAEP Integrated Reading Performance Record

Fluency Level	0-4 Deviations 99% Accurate	5-9 Deviations 97% Accurate	10-14 Deviations 96% Accurate	15-19 Deviations 94% Accurate	More than 20 Deviations Less than 94% Accurate
Fluent					
4 (13 percent)	25 (3.3)	39 (3.3)	20 (3.9)	13 (3.4)	3 (1.7)
3 (42 percent)	8 (1.5)	28 (2.1)	28 (2.0)	18 (2.2)	18 (2.3)
Nonfluent					
2 (37 percent)	2 (0.8)	12 (2.0)	19 (2.0)	29 (2.3)	38 (2.6)
1 (7 percent)	7 (4.1)	15 (4.6)	13 (4.2)	26 (5.4)	39 (5.9)

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B for details).

*For a complete description of the IRPR Fluency Scale, see Chapter 1.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

Nonfluent readers were more likely, however, to read less than 95 percent of the words accurately (15 or more deviations). Nearly two-thirds of nonfluent readers read with this much accuracy (67 percent for level 2, and 65 percent for level 1). These results would suggest that, although accuracy may play some role in supporting oral reading fluency, there does not seem to be a one-to-one correspondence.

A slightly different pattern was evident in the relationship between oral reading fluency and reading rate. As presented in Table 3.6, highly fluent readers also tended to be faster in their reading pace.

Table 3.6 — Fluency and Rate

Words Read Per Minute (WPM) for Students at Four Levels of Fluency*, Grade 4, 1992 NAEP Integrated Reading Performance Record

	PERCENTAGE OF STUDENTS AT EACH LEVEL OF FLUENCY			
Fluency Level	Less Then 80 WPM	80-104 WPM	105-129 WPM	More Than 130 WPM
Fluent				
4 (13 percent)	***	***	6 (1.6)	94 (1.6)
3 (42 percent)	2 (0.4)	19 (2.6)	32 (2.6)	47 (2.9)
Nonfluent				
2 (37 percent)	34 (2.6)	42 (2.9)	21 (2.2)	3 (0.8)
1 (7 percent)	76 (5.4)	21 (5.3)	3 (1.5)	***

The standard errors of the estimated percentages and proficiencies appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the whole population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference (see Appendix B for details).

* For a complete description of the IRPR Fluency Scale, see Chapter 1.

*** Sample size insufficient to permit reliable estimate.

SOURCE: National Assessment of Educational Progress (NAEP), 1992 Reading Assessment, Integrated Reading Performance Record

Ninety-four percent of students with the highest fluency rating (level 4) were reading at a rate of more than 130 words per minute. The remaining 6 percent of these students had an average rate of between 105 and 129 words per minute. Seventy-nine percent of the level 3 readers — also considered to be fluent — were reading at least 105 words per minute.

On average, nonfluent readers were unable to attain a rate of reading equivalent to that of their fluent counterparts. Only 24 percent of students with a fluency rating of level 2 were reading at least 105 words per minute. Among the least fluent readers at level 1, only 3 percent were able to read at a comparable speed. These data would suggest that reading rate may have played a key role in supporting students' overall reading fluency. It is also possible that readers who were not fluent may have frequently disrupted their oral reading with deviations from text and self-corrections, in turn slowing their reading rate. However, as with students' levels of accuracy, simply reading quickly did not ensure high fluency ratings. For example, over one-fifth (21 percent) of fluent fourth-graders at level 3 were reading less than 104 words per minute. Conversely, nearly one-fourth (24 percent) of nonfluent readers at level 2, and 3 percent at level 1 were reading at a rate of 105 words per minute or faster.

Summary

The IRPR results on oral reading accuracy and rate presented in this chapter serve to further illustrate the nature of developing reading abilities among the nation's fourth-grade students. Although the data are based on the reading of only one passage, they furnish us with a portrait of what may be expected from fourth-graders' oral reading performance in an assessment context. Moreover, these data contribute to the growing body of information on oral reading fluency by highlighting two major components — accuracy and rate.

In general, the fourth-graders in the IRPR were relatively accurate in their reading of the *Hungry Spider and the Turtle*. In light of these findings, it would seem that perhaps more students would have been rated as fluent based on the IRPR fluency scale.[50] However, as suggested by the data in this chapter, highly accurate performance did not necessarily guarantee highly fluent reading. This was also true, to some extent, for measures of reading rate. Nearly one-fifth of level 3 readers, considered to be fluent, were reading at less than 105 words per minute.

In addition to displaying some relationship to fluency, both rate and accuracy displayed a similar connection to overall reading proficiency.

[50] Fluency data are presented in Chapter 2 of this report. Based on the IRPR fluency scale, 55 percent of the fourth graders were rated as fluent, the remaining 45 percent were rated as nonfluent.

Faster reading was associated with higher reading achievement. Fourth-grade students who were reading at least 130 words per minute on average had the highest average reading proficiency, and those students with an average reading rate of fewer than 80 words per minute demonstrated the lowest overall reading proficiency.

The connection between accuracy and reading proficiency seemed less precise. Students making up to 14 deviations from the text displayed no significant differences in their average proficiencies. However, when only deviations that disrupted the meaning of the passage were considered, a more distinct relationship between accuracy and reading proficiency emerged. Fewer meaning-change deviations were more closely associated with higher reading proficiency. These results suggest that looking at meaning-change deviations, as opposed to all deviations, may provide more meaningful information regarding students' overall reading abilities.

For students in the IRPR, it appeared that relatively little self-correcting of deviations was taking place. Perhaps, this was due in part to the fairly high levels of accuracy attained by students in their oral reading of this passage. Also, students may have been aided in reading the passage orally by their previous silent reading of the text. Over three-fourths of the fourth graders corrected less than half of their meaning change deviations. However, it did seem clear that more proficient readers adjusted their deviations from text when a meaning change had occurred. This was a strategy that was not as apparent with less proficient readers.

This IRPR study is among the first attempts to utilize oral reading measures as a part of a large-scale assessment. While some studies have been conducted with older students and a few with younger students, the IRPR focused specifically on fourth graders. Thus, the developmental aspects of students at this stage in their education should be considered in any interpretation of these results.

By fourth grade, most students have begun to use their reading abilities in many different situations; they may have discovered the joys of reading for pleasure and may have learned that reading is a primary tool for accessing new information. It is possible that some fourth graders perceive reading in a situation like the IRPR study to be a task aimed at precise execution and slow, deliberate performance. Hence, their focus may be on

accuracy, rather than on producing fluid or smooth reading. If this is so, it may call into question the aspects of reading that receive emphasis at school. Perhaps the type of reading solicited in the classroom — and approved for its accuracy — is slow and methodical rather than fluent and expressive. The following chapter will address the implications of results from the IRPR study for classroom instruction and assessment.

4

Implications for Reading Instruction and Assessment

Educators and parents, alike, are interested in helping students find reading to be an enjoyable and successful experience. The Integrated Reading Performance Record administered by NAEP in 1992 leads to several important implications for enhancing reading instruction and supporting students' reading development. By focusing on specific aspects of oral reading — fluency, rate, and accuracy — the IRPR contributes to a growing body of research about the reading process. Clearly, a major goal in reading instruction, particularly for young readers, is to support the development of fluent reading that leads to textual understanding and meaning construction.

Many educators and reading experts have argued that the ability to read effortlessly and to focus on meaning rather than on individual word recognition requires a sufficient level of "automaticity" in processing the text. That is, readers must be able to decode and assign meaning to words with as little effort as possible. By doing so, more attention can be focused

on comprehension of the larger text ideas, and true reading for meaning can take place.[51] Others describe it as a complex process, an internal set of strategies that allow the reader — flexibly, rapidly, and usually without conscious attention — to access any source of information needed while focusing on the meaning of the text being read. Good readers use syntax, visual information in print, and their knowledge of the world in an integrated way to support fluent reading of text — attending to problem-solving as needed, while maintaining meaning.[52]

Traditionally, much of the effort devoted to developing automaticity in young readers was directed toward word recognition — the idea that the most rudimentary aspect of reading, decoding individual words, must be mastered before more advanced processes of reading whole texts for meaning could be attempted. With such an approach, reading fluency is thought to be attained through the sequential development of specific skills to aid decoding and comprehending. Reading for meaning remains the goal, but is considered to be the consequence of the reader's successful implementation of various necessary subskills.

Fluency May Be More Than the Sum of Its Parts. The results of the IRPR oral reading study contribute important information to our understanding of how reading accuracy and reading rate relate to fluency and overall proficiency. An essential finding from these data is that fluency appears to be more than simply the sum of its parts. For example, it was clear that reading accurately did not guarantee that fourth graders would be rated as fluent in their oral reading. A substantial number of nonfluent readers demonstrated fairly high levels of accuracy; at least one-third of the fourth graders rated as nonfluent were able to read the passage with at least 96 percent accuracy (see Chapter 3, Table 3.5). These students were able to recognize and read accurately most of the words in the passage, but actually read the text in which these words appeared with little or no sense of meaning and appropriate phrasing.

The implication here is that reading accurately, while a critical element, is not sufficient for supporting fluent reading. The ability to read a passage

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[51] Samuels, S. J. (1994). Toward a theory of automatic information processing in reading, revisited. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical Models and Processes of Reading*, 1093-1130. Newark DE: International Reading Association.

[52] Clay, M. M. (1991). *Becoming Literate: The Construction of Inner Control*. Auckland, New Zealand: Heinmann Education.

fluently with awareness of syntax, phrasing, and expression undoubtedly goes beyond simply being able to read words. While IRPR data can not be interpreted causally, the results suggest that reading fluency may have as much to do with being able to gain meaning from text (comprehension), as it does with being highly accurate in reading words. At least two pieces of data from this study support such an argument. First, the relationship between fluency ratings and overall reading proficiency, as determined by performance on the main NAEP reading assessment, was quite strong. Students rated at each level of performance on the fluency scale had higher average proficiencies than students at any lower level — displaying a positive relationship between comprehension and fluency. Conversely, the relationship between accuracy and overall proficiency appeared much weaker. In fact, there was no difference statistically between the proficiency of students who made only zero to four deviations from the text and students who made more deviations.

The IRPR data also revealed that reading rate was associated with reading fluency, as well as displayed a strong relationship to overall reading proficiency. Much like the relationship between oral reading fluency and overall proficiency, faster reading was associated with increased reading ability, as measured on the main NAEP reading assessment. In addition, most of the fluent readers were also among the fastest readers. For example, while 94 percent of the most fluent readers had a rate of more than 130 words per minute, no more than 3 percent of the nonfluent readers attained the same rate (see Chapter 3, Table 3.6). Thus, the relationship between rate and fluency and the relationship that both have with overall proficiency may actually represent a more complex interaction between the three aspects of reading — and one that merits further study.

The Role of Fluency in Reading Instruction

Given our increasing understandings about oral reading fluency and its relationship with overall reading ability, the implications for instruction may be numerous and varied. First, these results support the notion that reading for meaning is a necessary focus in reading instruction. Because of its strong association with overall reading proficiency, the fluency scale that was developed for this study appeared to be tapping students' ability to convey their understanding of the passage, not just their ability to read the words in the text. Thus, gaining meaning from the text seemed to be closely associated to students' fluent reading.

Accuracy in a Meaning-Oriented Context. It is possible instruction that isolates reading accuracy in the absence of a meaning-related context may be missing the most important element of students' ability to read words. Although words can be read and can be assigned meaning in isolation, when they are read as a part of text, the experience is quite different. Text-based recognition of words takes place in the context of building larger meaning. While gaining meaning from text is certainly dependent upon being able to read words in print, the evolving meaning of a passage can also provide clues to the reader who encounters unfamiliar words.[53] It would seem, then, that word recognition instruction could be enhanced by placing it within a meaning-oriented context. This may be especially critical for students who are "at-risk" due to lack of experiences that help to develop their language abilities.

Oral Reading As a Part of Instruction. Another implication for reading instruction that may be drawn from the results of this study is the desirability of giving attention to the oral reading fluency of developing readers. Because of the importance of silent-reading in developing advanced reading abilities, much of early instruction has tended to emphasize silent reading.[54] However, it is conceivable that relying solely on silent reading may not allow students opportunities for developing an awareness of aspects of fluency such as phrasing, syntax, and expressiveness. Some educators may be under the impression that by grade 4, students have acquired adequate oral reading fluency, and may fail to see it as a relevant component of the curriculum. As demonstrated in this study, however, a substantial number of fourth graders were considered nonfluent in their oral reading performances.

Given the potential importance of oral reading experiences in students' reading development, it was an interesting finding from this study that oral reading as a part of instruction had little association with students' fluency abilities. However, it is unclear how oral reading was being utilized in these classrooms. It is possible that not all types of oral reading instruction are

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[53] Adams, M. J. (1994). Modeling the connections between word recognition and reading. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.). *Theoretical Models and Processes of Reading*, 838-863. Newark DE: International Reading Association.

[54] Mullis, I. V. S., Campbell, J. R., & Farstrup, A. E. (1993). *NAEP 1992 Reading Report Card for the Nation and the States*. National Center for Education Statistics. Washington, DC: Government Printing Office.

equally effective in developing fluency. In fact, some educators have pointed to specific uses of oral reading in the classroom as being more beneficial than others.[55] For example, oral reading experiences that focus on the meaning in the passage and involve modeling of fluent reading have proven to be particularly successful in some classrooms.[56]

Some of the current research on oral reading in the classroom points to the manner in which teachers provide feedback to students' oral reading as a critical factor.[57] One approach to monitoring the oral reading of students is to provide immediate, corrective feedback when students deviate from the passage. This approach would entail a central focus on accuracy in developing oral reading fluency. However, data on accuracy and fluency reported in Chapter 3 of this report failed to support a strong relationship between these two factors. Furthermore, the data suggested that meaning change deviations may be much more important than non-meaning change deviations in terms of students' overall reading proficiency. Thus, accuracy alone may not be enough to sufficiently support oral reading fluency. Correspondingly, some research has suggested little or no positive effects on students' reading ability, when corrective feedback of students' deviations was used during their oral reading.[58]

Several studies have documented the instructional benefits of having students read aloud individually or in groups. Activities like Repeated Readings, Shared Book Experiences, or Paired Readings have met with success in some classrooms.[59] In some cases, students reported that their

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[55] Hoffman, J. (1981). Is there a legitimate place for oral reading instruction in a developmental reading program? *The Elementary School Journal, 81*, 305-310.

[56] Reutzel, D. R., Hollingsworth, P. M., & Eldredge, J. L. (1994). Oral reading instruction: The impact on student reading development. *Reading Research Quarterly, 29*, 41-61.

[57] McCoy, K., & Pany, D. (1986). Summary and analysis or oral reading corrective feedback research. *The Reading Teacher*, 548-554.

[58] Pany, D., & McCoy, K. M. (1981). Effects of corrective feedback on comprehension skills of remedial students. *Journal of Reading Behavior, 13*, 131-143.

[59] Reutzel, D. R., Hollingsworth, P. M., & Eldredge, J. L. (1994). Oral reading instruction: The impact on student reading development. *Reading Research Quarterly, 29*, 41-61.

Foley, C. L., Farra, H. E., & Change, E. A. (1991). Supplementing a fifth-grade basal reading program with taped and paired repeated reading. *Journal of Reading Education, 17*, 6-14.

Koskinen, P. S., & Blum, I. H. (1986). Paired repeated reading: A classroom strategy for developing fluent reading. *Reading Teacher, 40*, 70 75.

understanding of the passage increased by reading it aloud several times.[60] It would seem likely that as students are asked to pay attention to fluency — phrasing, syntax, expressiveness — they will in turn pay attention to the meaning of the passage. However, to do so, students may need models to demonstrate the nature of fluent reading. This modeling may be supplied by teachers, parents, or peers who have learned to read a particular passage fluently.

The Importance of Being Able to Read Fluently. Yet another implication of the IRPR study for supporting reading development may be an increased awareness on the part of educators and parents as to what constitutes fluent reading experiences for students. In turn, students can be made aware of what characterizes fluent reading and that focusing on the meaning of the text is crucial. The fluency scale developed for this study was intended to capture those qualities of reading that indicate the level of comfort and ease at which students were reading the passage. Those students who were rated as fluent in their oral reading displayed little difficulty in reading the passage; it seemed that these students might be able to simply absorb the piece for enjoyment without the frustration and stress of being challenged beyond their capabilities.

It is generally accepted that students learning to read need multiple reading experiences.[61] Moreover, it may be important for students to experience success frequently in reading to develop positive attitudes toward literacy. The IRPR fluency scale might provide one tool for educators to determine which materials can be read fluently. By listening to students read orally for just a few minutes, a determination can be made — based on the phrasing, consistency with author's syntax, and expressiveness of the reading — as to the appropriateness of reading material.

Most educators would agree that, while children learning to read should be presented with challenges in order to exercise their problem-solving processes, comfortable reading for enjoyment should not be neglected. It was evident from these data that particular literacy-supportive

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[60] Reutzel, D. R., & Hollingsworth, R. M. (1993). Effects of fluency training on second graders' reading comprehension. *Journal of Educational Research, 86*, 325-331.

[61] Lesesne, T. S. (1991). Developing lifetime readers: suggestions from fifty years of research. *English Journal, 80*, 61-65.

activities may play some role in students' reading fluency. For example, fluent readers were more likely to have daily opportunities to read books they had chosen in class and more likely to take books out of the library for their own enjoyment. Providing ample opportunities for students to read books that are personally meaningful — ones they have chosen — may be an important activity that supports the development of fluency and overall reading ability.

Oral Reading Assessment in the Classroom

As demonstrated by the IRPR as well as by many previous studies, the oral reading of students can reveal much about their developing reading abilities.[62] In fact, it can be very revealing of students' understanding of a passage. Recently, oral reading analysis in the classroom has been recommended by some educators as an alternative or supplement to paper-and-pencil measures. The advantages of assessing students' reading development through brief oral reading samples include the ability to do so frequently, given the small amount of time that is required to make reasonably accurate judgments about students' achievement. Furthermore, several studies have supported the use of oral reading analysis by demonstrating a strong correlation between oral reading scores and more traditional measures of reading comprehension.[63]

The IRPR study of oral reading is unique in its approach to conceptualizing and assessing oral reading competency. Many previous studies have viewed oral reading fluency as synonymous with reading accuracy or reading rate. Other studies have developed fluency scales that capitalize on measures of both attributes. The IRPR oral reading study, however, utilized a different approach to fluency and attempted to capture

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[62] Bembridge, T. (1994). A multilayered assessment package. In S. W. Valencia, E. H. Hiebert, & P. P. Afflerbach (Eds.). *Authentic Reading Assessment: Practices and Possibilities*, 167-184. Newark, DE: International Reading Association.

Hasbrouck, J. E., & Tindal, G. (1992, Spring). Curriculum-based oral reading fluency norms for students in grades 2 through 5. *Teaching Exceptional Children*. 41-44.

[63] Rasinski, T. V. (1985). *A Study of Factors Involved in Reader-Text Interactions that Contribute to Fluency in Reading*. Unpublished doctoral dissertation. Columbus, The Ohio State University.

Potter, M. L., & Wamre, H. M. (1990, September). Curriculum-based measurement and developmental reading models: Opportunities for cross-validation. *Exceptional Children*, 16-25.

additional characteristics of oral reading that may involve multiple language and cognitive processes. Moreover, oral reading accuracy and rate are viewed as important elements interrelated with the concept of fluency.

The IRPR fluency scale takes into account attributes of oral reading that may be particularly related to comprehension. Consequently, it may be useful in classrooms as a model for alternative performance-based reading assessment. Teachers who encourage independent reading and have students keep records of reading accomplishments could determine students' success with such reading tasks by conducting a fluency analysis on students' oral reading of a small portion of the material. This type of record could easily become another documentation of students' developing abilities that appear in their reading portfolios. Moreover, students could be taught to rate themselves. Listening to their own reading on tape and evaluating their own fluency may provide students with important tools for self-monitoring during reading.

Finally, the IRPR oral reading study was innovative in its attempt to integrate various measures and records of literacy development. Oral reading was one of a number of indicators that were combined in the IRPR to capture a broad view of literacy. Although this report focused on the results of the oral reading component of the IRPR, it was just one piece of a more thorough assessment of students' literacy development.

Implications for Large-Scale Assessments

As a special study, the IRPR allowed for more intensive examinations of literacy development than has been possible with traditional paper-and-pencil assessments and surveys. These findings can support and enhance data that are collected in the main NAEP assessment. Important qualitative information about students' educational development elicited through one-on-one interviews and performance measures can augment the extensive quantitative information gained through the main assessment. While the yield for parents, educators, and researchers is important information to help guide educational decisions, the effort and cost required in conducting complex, performance-based assessments must be acknowledged.

The kinds of assessment procedures that may be manageable in classroom applications can present daunting challenges for large-scale administration. A study like the IRPR that involves students in individual interviews and performances requires significant amounts of preparation, planning, and coordination to conduct on a large-scale basis. The

materials, equipment, and their handling present exceptional challenges. Furthermore, data collected through interviews must by transcribed from audiotapes before trained scorers can begin the work of rating and coding students' responses. Clearly, the effort is massive.

It is possible that the implementation of large-scale assessments or performance records like this one may not be feasible for all programs. However, NAEP provides a unique environment in which to explore innovative assessment instruments like this one. The national assessment, conducted biennially, affords important opportunities to work with national samples and to link special studies with large-scale assessments of educational progress. As demonstrated in this report, important and worthwhile information can be gained through such efforts.

Summary of Implications

The IRPR oral reading data can be used in connection with current understandings about reading and reading instruction to help focus parents' and teachers' efforts in promoting students' reading achievement. The results of this study underscore several activities warranting consideration by schools and families as they seek to support the literacy development of children.

- Deviations from the text that change meaning appear to have more impact on readers' comprehension than deviations that do not affect meaning. Instruction in word recognition or reading accuracy may be enhanced through meaning-related activities.
- Oral reading experience can be important in developing reading fluency; however, not all oral reading activities may be equally successful with all students. Young readers may need models and support through shared reading experiences.
- Understanding the nature of fluent reading may help educators and parents provide ample reading opportunities in which students can experience success and enjoyment. Moreover, it appears that reading outside of school for enjoyment and reading self-selected books in school may be related to reading fluency.

- Much can be learned about students' development in reading by listening to them read. Oral reading performances can provide information about students' fluency, accuracy, and rate — reflecting their proficiency with a particular passage. Students may also benefit from listening to themselves and evaluating their own fluency.

In the classroom, it is incumbent upon educators to maintain a broad perspective on students' development. There is certainly no one path to acquiring literacy proficiency; no doubt, there are as many unique routes as there are children. Accordingly, assessing students' progress should afford as many opportunities as possible to document students' abilities in different contexts, with different materials, and through multiple modes of responding. The IRPR may serve as one model or springboard for developing and implementing innovative measures that have potential for capturing, not just a snapshot, but a multidimensional, evolving image of students' progress in reading.

Appendix A

Integrated Reading Performance Record Interview Guide

RECORD COUNTER NO. |___|___|

SECTION A. INTRODUCTION

We are trying to learn more about how children in the United States read and I am very pleased that you're willing to help us with our project. I'm going to be asking you some questions about books that you read. I'll be asking you to read some things for me and we'll talk about the work you do in school.

This won't affect your grades and won't be shown to your teacher or parents.

Just take your time and do your best.

I'll be using this tape recorder and will take notes so I won't miss anything. Do you have any questions?

I'd like for you to help me check the tape recorder to make sure it's working. I'd like you to help me do this by reading aloud part of this story.

HAND STUDENT INTRODUCTORY PASSAGE. TURN ON TAPE RECORDER.

Start at the beginning of the story and begin reading aloud. I'll tell you when to stop.

BOX 1	■ ALLOW STUDENT TO READ ENTIRE PASSAGE. WHEN FINISHED ■ DESCRIBE STUDENT'S ABILITY TO READ INTRODUCTORY PASSAGE: (CHECK ONE) ☐ Read with ease. ☐ Read with some difficulty. ☐ Read with much difficulty.

RECORD COUNTER NO. |___|___|___|

That was fine. Now let's play back the tape.

BOX 2	PLAY BACK FOR A FEW SECONDS BY DEPRESSING *REVIEW* BUTTON. **IF TOO SOFT:** Please talk just a little bit louder so that I don't miss anything you say. INCREASE VOLUME. **IF TOO LOUD,** DECREASE VOLUME. **IF RECORDING WAS CLEAR:** That sounds just fine. Now I think we're ready to go ahead. RESET TAPE TO END OF STUDENT'S READING.

RECORD COUNTER NO. |_|_|_|

I'd like to talk with you about the kinds of things you read. I'm going to show you some pictures of different kinds of things people read, and I'd like you to tell me if you ever read things like these.

SHOW PHOTOGRAPH (BLUE BACKGROUND – MAGAZINES)

A-1. This picture shows examples of some magazines. Do you ever read magazines?

PUT PHOTOGRAPH ASIDE

☐ NO (SKIP TO A-2)

☐ YES, ASK: 1a. Can you name some magazines you read?

1b. Where do you read these magazines?

IF RESPONSE IS VAGUE OR UNCLEAR, ASK:

Do you read magazines like these . . .

- At home?
- Any place else?

BEST COPY AVAILABLE

SHOW PHOTOGRAPH (GOLD BACKGROUND – STORIES)

A-2. People sometimes read books like these that tell a story. Do you ever read books that tell a story?

PUT PHOTOGRAPH ASIDE

☐ NO (SKIP TO A-3)

☐ YES, ASK: 2a. Can you name a few for me that you have read?

2b. Where do you read these books?

IF RESPONSE IS VAGUE OR UNCLEAR, ASK:

Do you read storybooks like these . . .

- At home?
- Any place else?

SHOW PHOTOGRAPH (GRAY BACKGROUND – INFORMATIONAL TEXTS)

A-3. This picture shows some books that give information or tell you how to do something. Do you ever read books that give information?

PUT PHOTOGRAPH ASIDE

☐ NO (SKIP TO SECTION B)

☐ YES, ASK: 3a. Can you name a few for me that you have read?

3b. Where do you read these books?

IF RESPONSE IS VAGUE OR UNCLEAR, READ AND CHECK ALL THAT APPLY.

Do you read information books like these . . .

- At home?
- Any place else?

RECORD COUNTER NO. |__|__|__|

SECTION B. INSTRUCTIONAL READING

Let's talk about some of the things you read when you are being taught reading in school.

B-1. Did you bring the book you mainly read when you are taught reading?

☐ YES (RECORD TITLE, DATE, AND PUBLISHER)

_____

_____

☐ **IF NO, ASK:** Do you know the name of that book? (RECORD TITLE)

_____

_____

(SKIP TO B-2)

B-2. How often do you read this book in reading class?

IF RESPONSE IS VAGUE OR UNCLEAR, ASK:

Do you read this book . . .

- Every day?
- 2-3 times a week?
- Once a week?
- Other? (EXPLAIN)

B-3. Did you choose the book you're taught from or did your teacher assign you to read it?

B-4. Are you enjoying the (book)?

Why or Why not?

IF "INTERESTING": What made it interesting?

IF "BORING": What makes it boring?

B-5. Are you reading anything else for reading class?

IF YES: What other things?

B-6. Do you ever read things that you choose in reading class?

IF YES: What other things?

B-7. Have you written any of the following about things you've read for reading class:

- Book reports?
- Stories?
- Journal entries?
- Anything else? (EXPLAIN)

B-8. Do you have a chance to talk in class with other students about what you are reading?

RECORD COUNTER NO. |__|__|__|

SECTION C. INDEPENDENT READING

Now let's talk about the things you read on your own.

C-1. Are you reading any other books in your free time besides the ones your teachers assign you to read?

☐ NO: In the last few months, have you read any other books in your free time?

☐ NO (GO TO C-7)

☐ YES (GO TO C-2)

☐ YES (GO TO C-2)

		BOOK 1	BOOK 2
C-2.	What are the names of the books you are reading (have read)? (RECORD TITLE)	_____	_____
C-3.	Let's talk about (BOOK #1/#2) Did you bring (BOOK #1/#2) with you? (IF YES, RECORD DATES AND PUBLISHER.)	_____	_____
C-4.	Have you finished it?	☐ NO (C-3, NEXT BOOK) ☐ YES (C-5)	☐ NO (C-3, NEXT BOOK) ☐ YES (C-5)
C-5.	When did you finish (BOOK 1/ BOOK 2)?	☐ WITHIN LAST MONTH ☐ SINCE BEGAN THIS SCHOOL YEAR ☐ DURING SUMMER ☐ MORE THAN A YEAR AGO	☐ WITHIN LAST MONTH ☐ SINCE BEGAN THIS SCHOOL YEAR ☐ DURING SUMMER ☐ MORE THAN A YEAR AGO
		(REPEAT C-3 – C-5 FOR BOOK 2)	GO TO C-6

C-6. SELECT BOOK FINISHED (READ) MOST RECENTLY: What was (is) (NAME OF BOOK) about (so far)?

C-7. Are you given time to read books of your own choosing in school?

☐ NO (GO TO C-8)

☐ YES: How often?

IF RESPONSE IS VAGUE OR UNCLEAR, ASK:

- Every day?
- 2-3 times a week?
- Once a week?
- Other?

C-8. Do you talk about books you've chosen to read with:

- Your classmates or friends?
- Your teacher?
- Family or people you live with?
- Anybody else?

IF YES, PROBE: "With whom?"

C-9. Think about all the books you read. Do you keep any lists of these books?

☐ NO (SKIP TO C-10)

☐ YES: Do you keep a list of books you read for:

- Yourself?
- Your teacher?
- Anybody else?

IF YES, PROBE: "For whom?"

RECORD COUNTER NO. |__|__|__|

C-10. Where do you get the books you read on your own?

IF RESPONSE IS VAGUE OR UNCLEAR, ASK:

- Do you take books home from school?
- Do you read books that are in your home?
- Do you get books from the public library?

	IF YOU DETERMINED STUDENT READ INTRODUCTORY PASSAGE:	
BOX 4	☐ With ease ☐ With some difficulty	**SAY:** Before we go on, I need to turn the tape over. FAST FORWARD TO END. TURN TAPE OVER. SET COUNTER TO 000. GO TO SECTION D – NAEP ASSESSMENT PASSAGE, PAGE 9.
	☐ With much difficulty	GO TO SECTION E – EXAMPLES OF SCHOOLWORK, PAGE 14.

RECORD COUNTER NO. ⌊ ⌋⌊ ⌋⌊ ⌋

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SECTION D. NAEP ASSESSMENT PASSAGE

- **SILENT READING:**

Now I would like you to look at a story that you read earlier and read it again to yourself. Then I'll ask you questions about the story.

GIVE STUDENT NAEP PASSAGE.

Let me know when you are finished reading. Begin reading now.

WHEN STUDENT IS FINISHED, **RECORD COUNTER NO.** |__|__|__|

- **SUMMARY QUESTIONS:**

I want to ask you a few questions about this story. I know that you wrote answers to these questions before, but since I won't see what you wrote I would like you to answer them again for me. Don't worry about what you wrote before; just do the best you can to answer the question completely. You can look back at the story to help you answer the questions. This is the first question:

SHOW Q1 AND READ

D-1. "What do Turtle's actions at Spider's house tell you about Turtle?"

PAUSE

- **IF ANSWER:** Is there anything else? (GO TO D-2)
- **IF NO ANSWER OR "I DON'T KNOW":** You can look back at the story to help you answer the question.
  - **IF ANSWER:** Is there anything else? (GO TO D-2)
  - **IF NO ANSWER OR "I DON'T KNOW":** Ok, let's go on to the next question. (GO TO D-2)

D-2. This is the next question. *SHOW Q2 AND READ.*

"Who do you think would make a better friend, Spider or Turtle? Explain why."

PAUSE

- **IF ANSWER:** Is there anything else? (GO TO D-3)
- **IF NO ANSWER OR "I DON'T KNOW":** You can look back at the story to help you answer the question.
  - **IF ANSWER:** Is there anything else? (GO TO D-3)
  - **IF NO ANSWER OR "I DON'T KNOW":** Ok, let's go on to the next question. (GO TO D-3)

D-3. The last question is:

SHOW Q3 AND READ:

"Think about Spider and Turtle in the story. Pick someone you know, have read about, or have seen in the movies or on television and explain why that person is like either Spider or Turtle."

PAUSE

- **IF ANSWER:** Is there anything else? (GO TO MISCUE CODING)
- **IF NO ANSWER OR "I DON'T KNOW":** You can look back at the story to help you answer the question.
  - **IF ANSWER:** Is there anything else? (GO TO MISCUE CODING)
  - **IF NO ANSWER OR "I DON'T KNOW":** Ok, let's go on to the next question. (GO TO MISCUE CODING)

RECORD COUNTER NO. |_|_|_|

I'd like you to read the story aloud as if you're reading it to someone who's never heard it before. Some of the words might be hard to read, but just do the best you can. If you can't figure a word out, you can guess or skip it and go on, but I won't be able to help you with it. I'll tell you when to stop reading. You won't be reading the whole story. Please start at the beginning now.

RECORD COUNTER NO. |_|_|_|

HUNGRY SPIDER AND THE TURTLE

by Harold Courlander and George Herzog

Line #		Cumulative Number of Words per Line
1	Spider was a hungry one, he always wanted to eat. Everybody in Ashanti knew about his	16
2	appetite. He was greedy, too, and always wanted more than his share of things. So people	32
3	steered clear of Spider.	36
4	But one day a stranger came to Spider's habitation out in the back country. His name was	53
5	Turtle. Turtle was a long way from his home. He had been walking all day in the hot sun, and	73
6	he was tired and hungry. So Spider had to invite Turtle into his house and offer him something	91
7	to eat. He hated to do it, but if he didn't extend hospitality to a tired traveler it would get	111
8	around the countryside and people would soon be talking about Spider behind his back.	125

IF STUDENT IS HAVING DIFFICULTY READING, STOP HIM/HER HERE BY SAYING:

Thank you for reading that for me.

PLACE A SLASH MARK (/) AFTER THE LAST WORD READ BY THE STUDENT.

RECORD COUNTER NO. |___|___|___|

9	So he said to Turtle:	130
10	"There is water at the spring for you to wash your feet in. Follow the trail and you'll get	149
11	there. I'll get the dinner ready."	155
12	Turtle turned and waddled down to the spring with a gourd bowl as fast as he could. He	173
13	dipped some water from the spring and carefully washed his feet in it. Then he waddled back	190
14	up the trail to the house. But the trail was dusty. By the time Turtle got back to the house his	211
15	feet were covered with dirt again.	217
16	Spider had the food all set out. It was steaming, and the smell of it made Turtle's mouth	235
17	water. He hadn't eaten since sunrise. Spider looked disapprovingly at Turtle's feet.	247
18	"Your feet are awfully dirty," he said. "Don't you think you ought to wash them before	267
19	you start to eat?"	284
20	Turtle looked at his feet. He was ashamed, they were so dirty. So he turned around and	303
21	waddled as fast as he could down to the spring again. He dipped some water out of the spring	311
22	with the gourd bowl and carefully washed himself.	

STOP STUDENT HERE BY SAYING: Thank you for reading that for me.

RECORD COUNTER NO. |___|___|___|

SECTION E. EXAMPLES OF SCHOOLWORK

Now I'd like to talk to you about your schoolwork.

E-1. Did you bring any (I see that you've brought) schoolwork with you to show me?

- ☐ YES: What work did you bring with you? (SKIP TO E-2)
- ☐ NO: Is there a reason why you didn't bring any work? (SKIP TO SECTION F, PAGE 16)

E-2. Who decided which papers to bring?

IF RESPONSE IS VAGUE OR UNCLEAR, ASK:

- Your teacher or reading teacher?
- You decided on your own?
- Other (EXPLAIN)

E-3. How many papers did you bring with you?

- ☐ 1 (GO TO E-5)
- ☐ 2 OR 3 (GO TO E-4)
- ☐ 4 OR MORE: I'd like you to choose the 3 papers that you think are most like the assignments you usually do in reading class. (AFTER STUDENT PICKS 3, GO TO E-4)

E-4. I'm going to label these papers so that when I look at them later, I'll remember the order in which we discussed them.

NUMBER PAPERS 1, 2, 3, USING POST-IT NOTES IF STUDENT BROUGHT ORIGINALS.

E-5. Let's talk about this paper.

PAPER #1

E-5a. How often do you do work like this?

IF RESPONSE IS VAGUE OR UNCLEAR, ASK:

- Every day?
- 2-3 times a week?
- Once a week?
- Other (EXPLAIN)

RECORD COUNTER NO. |__|__|__|

E-5b. How do you know if you did a good job?

E-5c. What do you learn from doing this kind of work?

E-5d. Is there anything else you want to tell me about this paper?

PAPER #2

E-6a. How often do you do work like this? (POINT TO PAPER 2)

IF RESPONSE IS VAGUE OR UNCLEAR, ASK:

- Every day?
- 2-3 times a week?
- Once a week?
- Other (EXPLAIN)

E-6b. How do you know if you did a good job?

E-6c. What do you learn from doing this kind of work?

E-6d. Is there anything else you want to tell me about this paper?

PAPER #3

E-7a. How often do you do work like this? (POINT TO PAPER 3)

IF RESPONSE IS VAGUE OR UNCLEAR, ASK:

- Every day?
- 2-3 times a week?
- Once a week?
- Other (EXPLAIN)

E-7b. How do you know if you did a good job?

E-7c. What do you learn from doing this kind of work?

E-7d. Is there anything else you want to tell me about this paper?

BOX 5	**IF STUDENT BROUGHT <u>COPIES</u> OF SCHOOLWORK, SAY:** I'd like to keep these copies to look at later. (GO TO SECTION F, CLOSING) **IF STUDENT BROUGHT ORIGINALS OF SCHOOLWORK, SAY:** I'll bring these papers back to your teacher so I can make copies to look at later. (GO TO SECTION F, CLOSING)

RECORD COUNTER NO. ___

SECTION G. ADMINISTRATOR'S SUMMARY

A. Overall summary of student's behavior (level of interest, attention, understanding, effort, etc.)

_____

_____

_____

B. Any special circumstances affecting this interview? _____

_____

_____

_____

C. Who attended the interview?

☐ NAEP OBSERVER

☐ SCHOOL STAFF, INCLUDING TEACHER **[ASK D]**

☐ OTHER **[SPECIFY]**

D. IF SCHOOL STAFF OBSERVED THE INTERVIEW, ASK THEM:

1. How do you think the interview went? _____

_____

_____

2. Do you have any suggestions for improving the interview process?

_____

_____

E. Any other comments? _____

_____

_____

_____

SECTION F. CLOSING

Thank you (STUDENT'S NAME)! I really appreciate your coming and helping us today. We have a thank you gift for you. You can pick one of these books to take home.

LET STUDENT PICK ONE BOOK.

Make sure to take your books back with you. Thanks again.

STOP TAPE

Appendix B

Procedures and Methods

The 1992 NAEP Integrated Reading Performance Record (IRPR) was developed as a special study to augment the 1992 NAEP reading assessment. The 1992 assessment of reading was marked by several innovative features in addition to those embodied in the IRPR. A new framework had been developed under the direction of the National Assessment Governing Board that moved the NAEP reading assessment toward a more interactive and dynamic view of the reading process.[64] The assessment relied heavily on constructed-response questions to assess fourth-, eighth-, and twelfth-grade students' ability to interpret, to respond personally to, and to think critically about the text. Also, reading was measured according to three different purposes for reading — *reading for literary experience, reading to gain information, and reading to perform a task.* (Reading to perform a task was not assessed at grade 4.)

[64] *Reading Framework for the 1992 and 1994 National Assessment of Educational Progress.* National Assessment Governing Board. Washington, DC: Government Printing Office

Developing the IRPR

The IRPR extended these innovations in large-scale assessment by drawing on extant research and practices in classroom literacy assessment to construct an additional instrument, implementing those concepts at a national level. A committee was assembled to oversee the development of both the field test version and operational version of the IRPR. The committee members were drawn from leading researchers and educators in the field of reading with specific expertise in interview assessments and oral reading fluency. The members of the 1992 IRPR development committee are presented in Figure B.1.

Figure B.1
IRPR Development Committee Members

Member	Affiliation
Dr. Philip Gough	University of Texas
Dr. Barbara Kapinus	Maryland Department of Education
Dr. John Pikulski	University of Delaware
Dr. Gay Sue Pinnell	Ohio State University
Dr. Karen Wixson	University of Michigan

Additional consultation was provided by Dr. Elfreida Hiebert of the University of Colorado.

The committee held a total of four meetings to oversee the development, implementation, analysis, and reporting of the *Integrated Reading Performance Record.*

A field test of the IRPR was conducted in 1991 with a sample of approximately 500 students. Based on the results of that field test and information from field administrators, the committee made several revisions to the instrument to increase its usefulness and ease of administration. The interview guide presented in Appendix A is the final version of the IRPR produced by the committee before the 1992 administration.

The IRPR Design and Administration

The IRPR was developed to gather information from students in a one-on-one assessment format focusing on the following aspects of literacy development: independent reading activities and habits, instructional reading activities and habits, perceptions of classroom work in reading, and oral reading proficiency. In addition, a special component built into the IRPR addressed the question of response mode differences in students' demonstrations of reading comprehension. The results of the response mode comparison study are presented in a separate NAEP report, *Reading Assessment Redesigned: Authentic Texts and Innovative Instruments in NAEP's 1992 Survey* (in press).

The IRPR interviews were conducted with a subsample of the fourth-grade students who participated in the 1992 national reading assessment. Interviews typically took 30 to 40 minutes and were conducted at students' schools, usually in counselors' or administrators' offices. Teachers of potential sampled students were sent letters making them aware of the IRPR study and the need to have three student work samples available in the event any of their students were selected for participation. Sampling of IRPR participants took place at the school within a day or two of students' participation in the main reading assessment. Students were randomly chosen for the IRPR from among the grade-eligible students in a school who had been assigned one of four particular booklets in the main assignment. As with other NAEP assessments, schools were given the option of requiring parental permission before allowing students to participate.

Reporting Groups

This document contains results only for the nation. Because of the experimental nature of many of the procedures used in the IRPR oral reading study, results have not been reported for any of the traditional NAEP reporting groups. However, since all the typical reporting groups were used to assess the comparability of the IRPR sample and the main assessment sample, they are described below.

Race/Ethnicity. Racial/ethnic group classifications are based on the students' self-identification of race/ethnicity according to the following mutually exclusive categories: White, Black, Hispanic, Asian/Pacific Islander, and American Indian (including Alaskan Native). Based on

statistically determined criteria, at least 62 students in a particular subpopulation must participate in order for the results for that subpopulation to be considered reliable.

Gender. Gender was reported by the student.

Type of Community. The four mutually exclusive community types are — advantaged urban, disadvantaged urban, extreme rural, and other — as described below. According to information about parents' occupation obtained from the Principal's Questionnaire completed by each sampled school, indices are developed so that for each assessment approximately 10 percent of the most extreme advantaged urban, disadvantaged urban, and rural schools are classified into the first three categories. The remaining approximately 70 percent of the schools are classified into the "other" category.

Advantaged Urban: Students in this group reside in metropolitan statistical areas and attend schools where a high proportion of the students' parents are in professional or managerial positions.

Disadvantaged Urban: Students in this group reside in metropolitan statistical areas and attend schools where a high proportion of the students' parents are on welfare or are not regularly employed.

Extreme Rural: Students in this group do not reside in metropolitan statistical areas. They attend schools in areas with a population below 10,000 where many of the students' parents are farmers or farm workers.

Other: Students in the "Other" category attend schools in areas other than those defined as advantaged urban, disadvantaged urban, or extreme rural.

Parents' Highest Level of Education. As a part of the background questionnaire in the main assessment, students were asked to indicate the highest level education attained by either of their parents. The options that were provided for responding to this question were as follows — did not finish high school, graduated from high school, had some education after high school, graduated from college, or "I don't know."

As described above, the IRPR sample was drawn from those students who had been assigned a particular assessment booklet during the main assessment. Table B.1 presents information regarding numbers of students eligible, sampled, and assessed with complete data records.

In reporting results from this special study, the participation rate was clearly of some concern. Obtaining only 68 percent of the intended sample came close to precluding any generalization to the selected population -- the nation's fourth-graders. As a result, an investigation of the demographic characteristics of the IRPR sample was conducted to ensure comparability

Table B.1

Eligible and Sampled Students

Number of eligible students with designated booklet		**1664**
Eligible for IRPR, but not included in final sample:		
tape missing/lost/destroyed in shipping	292	
student did not attend main assessment	70	
sampled but student refused IRPR	4	
sampled but parent refused IRPR	1	
sampled but did not come to IRPR	37	
nonspecified reason	124	
Total	528	−528
Number of students in final IRPR sample		**1136**

with the main NAEP sample of fourth-grade students. The main assessment national sample was based on a stratified, three-stage sampling plan that ensured a nationally representative sample. The IRPR sample was a random sample of the fourth graders in the main assessment; thus, it was expected that the original IRPR sample would be nationally representative.

Tables B.2 and B.3 present pertinent data regarding the make-up and the characteristics of the IRPR sample compared to the main assessment fourth-grade sample. Those students who participated in the IRPR study are compared to all students in the main assessment on average proficiency

and representation of students by race/ethnicity, parents' highest level of education, type of community, and gender.

A review of these data revealed no significant, systematic differences between the demographic characteristics and performance of the IRPR students and the students in the main assessment. Therefore, the results of the 1992 IRPR are reported as representative of fourth-grade students across the country.

Table B.2

Percentages, Total Numbers, and Average Proficiencies of Fourth Graders in the IRPR and Fourth Graders in the Main Reading Assessment by Demographic Characteristics, Grade 4, 1992 NAEP Integrated Reading Performance Record

	Percentage and Total Number of IRPR Sample	Percentage and Total Number of Main Assessment	Average Proficiency of IRPR Sample	Average Proficiency of Main Assessment
Race/Ethnicity				
White	72 (0.9) N = 716	71 (0.2) N = 3917	226 (2.1)	226 (1.2)
Black	15 (0.9) N = 170	16 (0.1) N = 1013	196 (3.7)	193 (1.7)
Hispanic	9 (0.6) N = 176	9 (0.1) N = 1044	203 (3.5)	202 (2.2)
Asian/Pacific Islander	2 (0.5) N = 42	2 (0.3) N = 201	209 (5.4)	216 (3.3)
American Indian	2 (0.4) N = 27	2 (0.2) N = 117	215 (8.7)	208 (4.7)
Parents' Level of Education				
Grad. College	40 (2.0) N = 437	39 (1.1) N = 2481	226 (2.3)	227 (1.4)
Post H.S.	9 (1.0) N = 94	9 (0.5) N = 529	225 (3.7)	224 (2.2)
High School	13 (1.6) N = 151	12 (0.6) N = 769	216 (3.5)	213 (1.7)
No High School	3 (0.6) N = 45	4 (0.4) N = 291	199 (6.7)	199 (2.7)
I don't know	34 (2.0) N = 408	36 (1.0) N = 2228	212 (2.8)	211 (1.2)
Type of Community				
Extreme Rural	12 (2.1) N = 111	12 (2.2) N = 608	220 (5.1)	220 (3.0)
Urban Disadv.	8 (1.3) N = 131	9 (1.2) N = 742	193 (4.4)	188 (2.7)
Urban Adv.	10 (1.9) N = 124	10 (1.9) N = 693	236 (5.9)	240 (3.1)
Other	70 (2.8) N = 770	69 (2.9) N = 4271	219 (1.8)	218 (1.1)
Gender				
Male	50 (1.6) N = 560	51 (0.6) N = 3171	214 (2.2)	214 (1.2)
Female	50 (1.6) N = 576	49 (0.6) N = 3143	224 (2.2)	222 (1.0)

The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the population is within plus or minus two standard error of the estimated for the sample. In comparing two estimates, one must use the standard error of the differences.

Table B.3

Average Proficiencies of Fourth Graders in the IRPR and Fourth Graders in the Main Reading Assessment, Grade 4, 1992 NAEP Integrated Reading Performance Record

Average Proficiency of IRPR Sample	Average Proficiency of Main Assessment
219 (1.8)	218 (1.0)

The standard errors of the estimated percentages appear in parentheses. It can be said with 95 percent certainty for each population of interest, the value for the population is within plus or minus two standard errors of the estimate for the sample. In comparing two estimates, one must use the standard error of the difference.

Drawing Inferences from the Results

The use of *confidence intervals*, based on the standard errors, provides a way to make inferences about the population means and proportions in a manner that reflects the uncertainty associated with the sample estimates. An estimated sample mean proficiency of ± 2 standard errors represents a 95 percent confidence interval for the corresponding population quantity. This means that with approximately 95 percent certainty, the average performance of the entire population of interest is within ± 2 standard errors of the sample mean.

As an example, suppose that the average reading proficiency of students in a particular group was 256, with a standard error of 1.2. A 95 percent confidence interval for the population quantity would be as follows:

$$\text{Mean} \pm 2 \text{ standard errors} = 256 \pm 2 \bullet (1.2) = 256 \pm 2.4 = 256 - 2.4 \text{ and } 256 + 2.4 = 253.6, 258.4$$

Thus, one can conclude with 95 percent certainty that the average proficiency for the entire population of students in that group is between 253.6 and 258.4.

Similar confidence intervals can be constructed for percentages, provided that the percentages are not extremely large (greater than 90) or extremely small (less than 10). For extreme percentages, confidence intervals constructed in the above manner may not be appropriate; however,

procedures for obtaining accurate confidence intervals are quite complicated. Comparisons involving extreme percentages should be interpreted with this in mind.

To determine whether there is a real difference between the mean proficiency (or proportion of a certain attribute) for two groups in the population, one needs to obtain an estimate of the degree of uncertainty associated with the difference between the proficiency means or proportions of these groups for the sample. This estimate of the degree of uncertainty — called the standard error of the difference between the groups — is obtained by taking the square of each group's standard error, summing these squared standard errors, and then taking the square root of this sum.

Similar to the manner in which the standard error for an individual group mean or proportion is used, the standard error of the difference can be used to help determine whether differences between groups in the population are real. The difference between the mean proficiency or proportion of the two groups $\pm$ 2 standard errors of the difference represents an approximate 95 percent confidence interval. If the resulting interval includes zero, there is insufficient evidence to claim a real difference between groups in the population. If the interval does not contain zero, the difference between groups is statistically significant (different) at the .05 level.

The procedures described in this section, and the certainty ascribed to intervals (e.g., a 95 percent confidence interval) are based on statistical theory that assumes that only one confidence interval or test of statistical significance is being performed. When one considers sets of confidence intervals, such as those for the average proficiency of community types, statistical theory indicates that the certainty associated with the entire set of intervals is less than that attributable to each individual comparison from the set. If one wants to hold the certainty level for a specific set of comparisons at a particular level (e.g., .95), adjustments (called multiple-comparisons procedures) need to be made.

The standard errors for means and proportions in the NAEP reports are statistics and subject to a certain degree of uncertainty. In certain cases, typically when the standard error is based on a small number of students or when the group of students is enrolled in a small number of schools, the amount of uncertainty associated with the standard errors may be quite large. Throughout this report, the symbol "!" designates estimates of standard errors subject to a large degree of uncertainty. In such cases, the standard errors — and any confidence intervals or significance tests involving these standard errors — should be interpreted cautiously.

Appendix C

Oral Reading Scoring Procedures

The rating and analysis of students' oral reading took place after the individual interviews were conducted. Using taped recordings of the individual interviews, the analyses were conducted by trained raters and were overseen by ETS development staff. The coding of oral reading deviations and the rating of students' fluency were conducted separately. As described in Chapter 1, the fluency scale does not take into account the accuracy of students' reading in determining their overall fluency. By having separate raters assign a fluency rating, there was less possibility that the raters' impressions of accuracy would confound the rating of fluency.

Rating Students' Oral Reading Fluency

Fluency ratings were based on the fluency scale presented and described in Chapter 1. To facilitate training of raters and to anchor the four fluency levels, exemplar tape recordings of oral reading were selected from the IRPR

sample. For each level of fluency, 10 to 15 tapes of different students were identified to help portray the degree of fluency at that level.

The actual rating of fluency was accomplished by having raters listen to individual tapes twice. The first exposure allowed raters to become familiar with the student's unique vocal characteristics and to time the oral reading rate. Then, while listening to the tape a second time, raters made their decision regarding the level of fluency exhibited by the student's oral reading. No markings or notes were recorded in this process except for the 1 through 4 fluency rating that was assigned. Essentially, it was a holistic rating guided by the specific descriptions provided in the fluency scale and the exemplar taped oral readings.

The reliability data for the fluency ratings are reported in Table C.1. Approximately 25 percent of the audio taped oral reading performances were coded by a second rater to determine reliability in scoring. While the percentage of exact agreement was lower than would be desirable, the percentage of adjacent agreement, the reliability coefficient, and the percentage agreement of classification (nonfluent vs. fluent) reflect at least moderate reliability in scoring.

Table C.1

Fluency Scoring Reliability Data

Reliability Coefficient	Percentage Exact Agreement	Percentage Adjacent Agreement	Percentage Classification Agreement
.70	58	98	74

Coding Students' Deviations from Text

The coding of deviations from the text required a multistep process for each student in the IRPR sample. First, raters listened without interruption to individual tapes of students' oral reading. As with the fluency rating, this first exposure to the student's reading was used to become familiar with his or her unique vocal qualities. Because more specific determinations had to be made regarding students' production of words, raters were specially trained to be sensitive to regional and ethnic variations in oral reading style and individual word pronunciation.

After this initial listening to the oral reading, raters listened once more from the beginning of the tape, for the purpose of documenting students' deviations from the text. Notations were made on a typescript that had been prepared for recording deviations. Each word on the typescript had been numbered. As students produced a word or group of words that deviated from the text, their actual production was recorded at the appropriate place on the typescript. All attempts by a student to read a word or group of words were documented. Deviations were documented whether or not they were ultimately self-corrected by students. However, successful self-corrections were recorded along with the deviations.

Three types of deviations were documented as a part of this study — substitutions, omissions, and insertions. Each type of deviation was indicated on the typescript with a specific code or notation. The following guidelines were used in determining when an observed response (student's oral production of a word or a group of words) should be notated as a deviation.

Substitution — only whole-word substitutions were notated — partial attempts were not considered substitutions, the addition or deletion of prefixes or suffixes to text words were considered whole-word substitutions for the text word, groups of contiguous text words substituted with one or more words were noted as one complex substitution.

Omission — only whole-word omissions were notated as omissions — partial word omissions were considered *substitutions*, an omitted series of contiguous text words was notated as one omission.

Insertions — only whole-word insertions were notated as insertions — insertions of prefixes or suffixes were considered *substitutions*, multiple word insertions as a single string of words at one location in the passage were notated as one insertion.

After the appropriate notations were made on the typescript, each observed deviation was recorded on a separate coding sheet. The line number, word number, expected response (text word), and observed response (student's production) were recorded for each deviation on the coding sheet. Also, raters indicated on the coding sheet whether or not students had successfully self-corrected their deviations.

Finally, raters returned to the location of every deviation on the typescript and determined if the original production of the deviation (whether or not it had ultimately been self-corrected) had resulted in a change of meaning in the text. This was a very general consideration of the main idea of the sentence and its relation to the entire passage. It was not a decision based simply on grammatical considerations. The appropriate meaning-change code was then entered on the coding sheet for each deviation.

The reliability data for coding students' deviations from the text are presented in Table C.2. Approximately 25 percent of the audio taped oral reading performances were coded by a second rater to determine the reliability in coding. The percentage of agreement on *deviations* represents agreement between first and second scorers on the occurrence of a deviation as well as the type of deviation — substitution, omission, or insertion. The percentage agreement on *meaning change* refers to raters' agreement on whether or not a change in meaning had occurred as a result of a deviation. The percentage agreement on *self correction* indicates raters' agreement on whether students appropriately corrected their text deviations.

Table C.2

Deviation Coding Reliability Data

Average Percentage Agreement on Deviations	Average Percentage Agreement on Meaning Change	Average Percentage Agreement on Self Correction
98	86	96

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